# SeaLife
# ReefMaster®

## Instruction Manual
## DC300/DC310
## Digital Underwater
## Camera Set
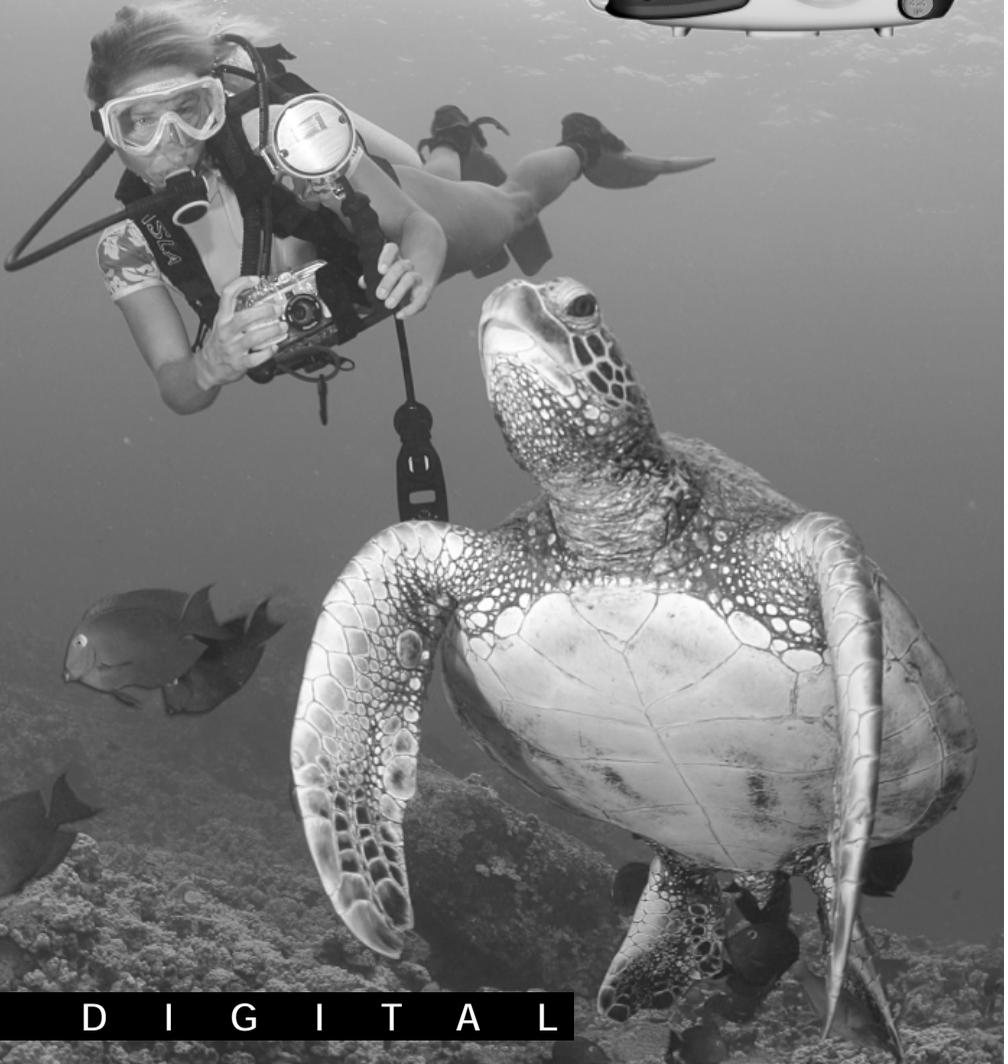
D  I  G  I  T  A  L

# MUST DO

1. Read warnings in manual (pages 6-8).

2. If you have any questions after reading this manual or problems regarding the SeaLife digital camera, housing or accessories follow these instructions: Do not contact dealer; do this:
   • Check trouble shooting guide in this manual or on the SeaLife website www.sealife-cameras.com
   • If this does not solve the problem contact SeaLife Customer Service: USA (856) 866-9192. For other countries, contact the Sealife national distributor. For a complete list, see the above website.

3. Use only the following AA batteries:
   • SeaLife Nickel Metal Hydride (Ni-MH) 1800mAh or higher rechargeable batteries. Carefully follow charging instructions.
   • Lithium non-rechargeable batteries. Lithium batteries last the longest of all batteries but they are expensive and they are not rechargeable.
   • We do not recommend using Alkaline batteries due to their short battery life, however new high-energy alkaline batteries, like Duracell Ultra, have a longer battery life and can be used with the SeaLife digital camera. Even high-energy alkaline batteries do not last as long as SeaLife Ni-MH batteries. Do not use standard alkaline batteries.
   • Replace batteries when battery power status indicator on camera is down to one bar.
   • Turn camera power or LCD monitor OFF when not using camera to preserve battery power.
   • Always use freshly charged batteries. Rechargeable batteries can dis-charge at room temperature up to 10% per day. Store batteries in plastic bag or container in refrigerator or cool, dry place.

4. Use only the following brands of SD memory cards that have been tested to work with SeaLife cameras:
   • SanDisk, Kingston, Lexar, Panasonic, PYN, Ritek, Pretec and Kodak (registered trademarks of respective companies).

5. Keep main O-Ring and housing perfectly clean.
   • Clean housing and main O-ring with fresh water after every use.
   • Do not remove O-ring. Do not grease.
   • Store camera and housing only after careful cleaning and when totally dry.

6. Never let any moisture or dirt get inside housing when opening.
   • Only open and load the housing in dry cool air, such as inside an air-conditioned room.

7. For good underwater pictures you need:
   • Clear water conditions.
   • Control your buoyancy before taking picture.
   • Get as close as possible to subject (ideal distance is 2′ to 6′), (0.6 to 1.8 meters). Minimum shooting distance is 3.5′ (107cm)
   • Use optional SeaLife Macro Lenses/Filters for superb details and vibrant colors, inside 3.5′ (107cm) shooting distance.
   • For best underwater pictures, use one or two SeaLife External Flashes.

## Limited Warranty

This product will be replaced or repaired free of charge within 1 year from the purchase date in the case of a manufacturing defect, if the complete defective product is sent freight prepaid at the sender's risk with prepayment for handling and shipping of US$10.00 to: **Pioneer Research**, Attn: SeaLife Service Center, 97 Foster Road, Suite 5, Moorestown, NJ 08057, or to the SeaLife distributor in your country of residence. The shipment must include an original purchase receipt or proof of purchase with the purchase date. Excluded are any consequential damages, cosmetic damages, damages to products which show abuse, non-conformance with the instructions, *particularly water damage* due to damaged O-ring or removed O-ring or any particles wedged between the housing and the O-ring, or tampering and attempted repair of the product. Excluded are scratches on lenses or damaged lens coatings. Cameras used in rental operations are excluded from this warranty and have a special service support program *(Contact SeaLife/Pioneer Research)*.

## FCC Notice

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in commercial installation. This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, detectable by turning the equipment in question off and on, the user is encouraged to try to correct the interference by one or more of the following measures: Reorient or relocate the receiving antenna; Increase the distance between the equipment and the receiver; Connect the equipment to an outlet on a different circuit than that which the receiver is connected to; Or consult the dealer or an experienced radio/TV technician for help.

## NOTE

A shielded-type DC power cable incorporated with a ferrite core is required in order to meet the FCC emission limits and also to prevent interference to nearby radio and television reception. Use only shielded I/O cable incorporated with a ferrite core to connect this equipment to host computer or TV set. Shielded AC power cable and shielded I/O cables are required in order to meet the FCC emission limits. It is essential that only the supplied power cord and I/O cable(s) be used.

## Service: *Do not contact your dealer for product questions or service.*

After going through the Trouble Shooting Guide in this manual, if you cannot find a solution for a problem: Contact the SeaLife Service Center or send the camera with the housing to an authorized SeaLife service facility or directly to SeaLife Headquarters in Moorestown, NJ USA or the SeaLife distributor in your country. *(A list of SeaLife distributors can be found on the website www.sealife-cameras.com)*. Include: US$10.00 for handling and domestic shipping; your day time phone number, proof of purchase and return address (No P.O. BOX); a clear written description of problem.
Ship prepaid to:
Pioneer Research, Attn: SeaLife Service Center, 97 Foster Road, Suite 5
Moorestown, NJ 08057 USA
Phone: (856) 866-9192 • Fax (856) 866-8615 • www.sealife-cameras.com

# WARNING

🚫 *Only use SeaLife AC power adapter item #SL13132 with 3.3 volt DC output.  Using any other AC adapter will damage the camera..*

🚫 *The inner camera is not waterproof or water resistant.  Use the inner camera only inside the SeaLife waterproof housing when in or around water. Follow waterproof housing instructions carefully to prevent water damage to camera.  Water damage to camera is not covered by warranty unless it has been determined that the damage was a result of a manufacturing defect.*

🚫 *Do not use this camera if it is emitting smoke, emitting any unusual odor or noise, or if it is in any other abnormal state. Operating the camera in any of these situations may cause a fire or an electrical shock.  Stop using the camera immediately, turn the camera off, and then disconnect the power source (batteries or AC power adapter). (If you are using the AC power adapter, unplug the adapter from the AC power outlet after you have disconnected the camera.)  After checking that smoke is no longer being emitted, contact your local authorized SeaLife service facility and request repairs.  Never attempt to repair this camera yourself as this is dangerous.*

🚫 *Do not use the camera if any water has entered the camera, even after camera has dried.  Turn the camera off, and then disconnect the power source (batteries or AC power adapter).  (If you are using the AC power adapter, unplug the adapter from the AC power outlet after you have disconnected the camera.)  Then contact your local SeaLife authorized service facility.  Do not continue to use the camera as this may cause a fire or an electrical shock.  Be careful when handling wet camera. Camera and batteries may become very hot.*

🚫 *Do not use the camera if any foreign objects have entered the camera. Turn the camera off, and then disconnect the power source (batteries or AC power adapter).  (If you are using the AC power adapter, unplug the adapter from the AC power outlet after you  have disconnected the camera.)  Then contact your local SeaLife authorized service facility.  Do not continue to use the camera as this may cause a fire or an electrical shock.*

🚫 *If the camera has been dropped or if the camera case has been damaged, turn the camera off, and then disconnect the power source (batteries or AC power adapter).  (If you are using the AC power adapter, unplug the adapter from the AC power outlet after you have disconnected the camera.)  Then contact your local SeaLife authorized service facility.  Do not continue to use the camera as this may cause a fire or an electrical shock*

🚫 *Do not expose the camera to moisture and make sure that there  is no water getting into the camera.   Take particular care when using the camera under extreme weather conditions such as rain or snow, or when operating the camera at the beach on near water.  Water in the camera may cause a fire or an electrical shock.*

# WARNING

○ *Do not insert or drop any objects into the SD memory card or battery slots.  This may cause a fire or an electrical shock.*

○ *Do not attempt to modify this camera.  This may cause a fire or an electrical shock.*

○ *Do not remove the camera casing.  This may cause an electrical shock. Internal inspection, maintenance and repairs should only be carried out by your local authorized SeaLife service facility.*

○ *Do not touch camera, charger or AC adapter during a thunderstorm if you are using the AC power adapter.  This may cause an electrical shock.*

○ *Never operate this camera in any way while driving a vehicle.  This may cause a traffic accident.*

○ *Do not place the camera in any unstable locations such as on a wobbly table or sloping surface where the camera may fall or tip over and cause injury.*

○ *Do not place camera, charger or batteries in damp or dusty locations. This may cause a fire or an electrical shock.*

○ *Do not place this camera in a location affected by oil fumes, steam, seaspray, rain, such as a boat deck, damp clothes, cooking stove or humidifier.  This may cause a fire or an electrical shock.*

○ *Do not leave this camera in a location subject to extremely high temperatures, such as in a sealed vehicle or in direct sunlight.  Exposure to high temperatures may adversely affect the camera case and internal components and may cause a fire.*

○ *Do not cover or wrap the camera, battery charger or the AC power adapter with a cloth or quilt.  This may cause heat to build up and distort the case and cause a fire.  Always use the camera and its accessories in well-ventilated locations*

# WARNING

*Handle the camera carefully and do not bump the camera into any hard object. Handling the camera roughly may cause a malfunction.*

*Do not move the camera while it is attached to AC adapter, USB or video cable. (If you are using the AC power adapter, unplug the adapter from the AC power outlet after you have switched off the camera.)*

*Ensure that any connector cords or cables to other devices are disconnected before moving the camera. Failure to do so may damage the cords or cables and cause a fire or an electrical shock.*

*When handing the camera, always unplug it from the power source (AC power adapter) for safety. (If you are using the AC power adapter, unplug the adapter from the AC power outlet after you have disconnected the camera.) Failure to do may result in an electrical shock.*

*When leaving the camera unused for long periods, such as during a vacation, always remove the batteries or unplug the camera from the AC power adapter for safety. (If you are using the AC power adapter, unplug the adapter from the AC power outlet after you have disconnected the camera.) Failure to do so could result in a fire.*

*Do not use batteries other than those specified for use with your camera. The use of unsuitable batteries may result in the batteries splitting or leaking and causing a fire, injury, or damaging the battery compartment.*

*When inserting batteries into the camera, check the polarity markings on the battery ( - and + ) to ensure that you insert the battery correctly. Incorrect battery polarity may result in the batteries splitting or leaking and causing a fire, injury, or damaging of the battery compartment.*

*Remove the batteries if the camera will not be used for an extended period of time. The batteries may leak and cause a fire, injury or damage the battery compartment. If the batteries leak, clean and wipe the battery compartment carefully and install new batteries. Wash your hands carefully if you touch the battery fluid.*

# TRADEMARK INFORMATION

- Microsoft® and Windows® are registered trademarks of Microsoft Corporation.
- Pentium® is a registered trademark of Intel Corporation.
- Macintosh is a trademark of Apple Inc.
- SD™ is a trademark.
- PhotoSuite®, PhotoVista® and the MGI® logo are trademarks or registered trademarks of MGI® Software Corp.
- Adobe, the Adobe logo, and Acrobat are trademarks of Adobe Systems Incorporated.
- SeaLife®, Reefmaster®, Land & Sea® are registered trademarks of Pioneer Research..
- Other names and products may be trademarks or registered trademarks of their respective owners.

# NOTICE

Please start by reading the important messages below first.
1. The bundled driver, software, design, specifications and user's manual that packaged with the camera are subject to change without notice.
2. The accessories that come with the camera may vary between regions.
3. Driver updates are posted on the SeaLife website; www.sealife-cameras.com.
4. We are not liable what so ever for any compensation arising from errors in descriptions in this user's manual.

# CONTENTS

# INTRODUCTION

**How It Works - A Very Unique Camera**
**Land & Sea®**

The SeaLife Reefmaster Digital Land & Sea camera allows you to choose between Land Mode for taking land pictures, Sea Mode for taking underwater pictures and Flash mode for taking underwater pictures with your SeaLife External flash (optional accessory). This is essential for taking great pictures and achieving the perfect picture exposure.

**Sea Mode:** If the camera is set to Sea Mode and used inside the Underwater Camera Housing, the camera is programmed to automatically find the best exposure control combination in an underwater environment. The internal sensor reads the light conditions through the lens (TTL). It evaluates the whole picture in 64 segments with higher priority in the center. Then it automatically sets the correct exposure time and CCD sensitivity. SeaLife has tested several thousand combinations to achieve the optimal exposure controls. If the surrounding light is too dark, the flash will fire automatically. While in the Sea mode, the camera flash will actually fire two, three or four times depending on the distance to the subject. The weaker flashes, called a pre-flash, is used to determine the brightness and reflection of whatever you're taking a picture of. The primary flash will fire 0.2 seconds after the pre-flash (hardly noticeable). Only the primary flash is used by the camera for properly exposing the final picture. The combination of the pre-flashes and main flash ensures the optimal exposure setting for the camera. The reach of the inner camera's flash is limited to 3', so we highly recommend you get the SeaLife External Flash for the brightest, most colorful pictures.

**Flash mode:** In order to reduce underwater "backscatter" (spots that show up in pictures caused by tiny particles in the water) and get more vivid colors, we recommend that you use the SeaLife External Flash, which is sold separately. You can even use two external flashes, like the pros do, in order to eliminate shadows in your pictures. When using the SeaLife External Flash, you must set the camera to the Flash Mode. The Flash Mode does not use a pre-flash, since this would cause the external flash to fire during the pre-flash and not during the primary flash.

If you are taking close-up pictures with the SeaLife Macro lenses and External Flash and you experience overflashing from a reflective fish or object, you have the choice of immediately deleting the image by pressing the shutter button again within 3 seconds (the monitor will show you the picture and display "DELETE THIS?"). While in the Flash mode, you can press the LCD button to select between MACRO flash mode and FAR flash mode. MACRO flash mode will adjust the camera exposure program and prevent overflashing of close-up pictures. FAR flash mode will increase the camera's exposure setting for brighter images beyond 6 'shooting distance. The camera gives you many options to create great photos under many different conditions and using the various flashes or lens accessories.

**Land Mode:** If you are taking land pictures, set the camera to Land Mode. Now the camera is automatically programmed to take great land pictures. The camera evaluates light conditions through the lens. If it's too dark, the camera uses the built-in flash to fire a pre-flash (to test the picture quality) and a primary flash for taking a properly exposed picture. If you like, you can override the camera's fully automatic functions. In many cases you might actually take a better picture without flash, such as in longer shooting distances in low light or indoor, and you can select "no flash." In other cases, even in bright light, you might select "fill-flash" to brighten up shadows and avoid dark areas. Sometimes pictures can be "grainy" if you do not have enough light and do not use the flash. No matter how dark it is, even if it becomes impossible for any camera to take a sharp picture, the camera will still try to take a picture. If that happens, get closer to the subject and use a flash or another good light source. In general, the closer you are to your subject and the brighter the light conditions are, the better the picture results will be. With a little experimenting you will quickly be on your way towards great digital pictures to share with your friends and family.

### Your computer

It's easy to connect the camera to your computer, to download pictures, edit pictures and print or email pictures.

**Download** – The USB connection will quickly transfer pictures from your camera to your computer. Please refer to the detailed instructions on page 29 on how to connect your camera to the computer.

**Editing** – You will enjoy picture editing with MGI Photo Suite®, but you can also use your own picture-publishing program that you are familiar with. First take pictures in the highest quality setting. Then you can make adjustments to the image on your computer, like cropping, adjusting the picture size or some really creative special effects.

**Printing** – For photo-like 5″ x 7″ prints, set the printer on the highest resolution and use high-quality glossy photo paper. You will discover that creating a vacation trip report on Word® with your best pictures is an impressive way to save and share your memories. You are also able to make enlargements up to 11″ x 17″.

There are many great books and websites dedicated to the world of digital photography. Please visit our website: www.sealife-cameras.com for links to the best website and other suggestions on how to learn more about digital photography.

# Package contents

Carefully unpack your package and make sure that you have the following items.
Common Product Components:

- ■ Digital camera
- ■ Video cable
- ■ Quick Guide
- ■ USB cable
- ■ Deflector for External Flash

- ■ Software CD-ROM
- ■ Camera strap
- ■ Camera Carry Case
- ■ Underwater Housing

# Common (Optional) Accessories:

- ■ SD memory card
  (up to 256MB capacity)
- ■ AC power adapter (3.3 volts)
- ■ 4 rechargeable NI-MH
- ■ External Flash
- ■ Wide angle lens
- ■ Macro lenses

- ■ 4 – Pack Rechargeable batteries
  with charger and foreign plug
  adapters (SL 190)
- ■ Carrying Cases
- ■ For a complete listing of all
  accessories, please visit the
  SeaLife website at
  www.sealife-cameras.com

## Front view



Focus switch
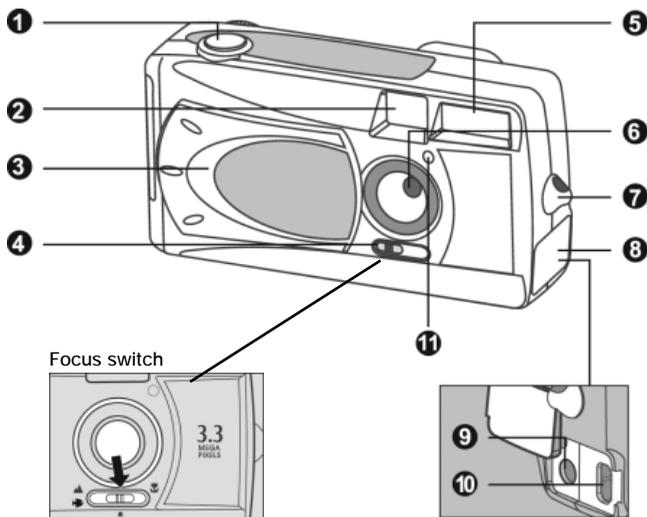
- 🌷 **Macro** - Land: 2′ - 3′ (55cm to 90cm), underwater: n/a
- 👤 **Portrait** - Land: 3′ - 6′ (90cm to 1.8m), underwater: n/a
- 🔺/🌊 **Landscape / Seascape** - Land: 6′ to infinity (1.8m to infinity),
  underwater: 3.5′ to infinity,
  (107 cm to infinity)

| | |
|---|---|
| 1. Shutter button | 6. Lens |
| 2. Optical viewfinder | 7. Strap eyelet |
| 3. Lens cover | 8. Jack cover |
| 4. Focus switch | 9. DC IN jack |
| 5. Flash | 10. USB connector |
| | 11. Self-timer light |

# Rear view
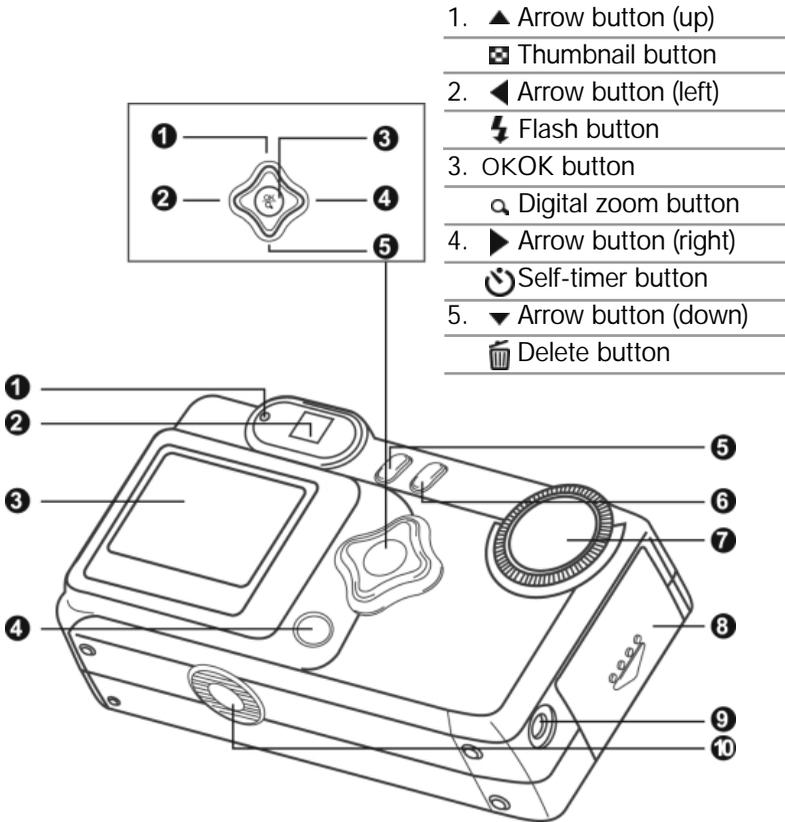


| 1. | ▲ Arrow button (up) |
|---|---|
| | ▣ Thumbnail button |
| 2. | ◀ Arrow button (left) |
| | ⚡ Flash button |
| 3. | **OK** OK button |
| | 🔍 Digital zoom button |
| 4. | ▶ Arrow button (right) |
| | ⏱ Self-timer button |
| 5. | ▼ Arrow button (down) |
| | 🗑 Delete button |

| | |
|---|---|
| 1. LED indicator | 5. 🖼 Menu button |
| 2. Viewfinder | 6. ⏻ Power button |
| 3. LCD monitor | 7. Mode dial |
| 4. ▢ Display button - | 8. Battery/SD card cover |
| Hold for 3 seconds to access Quick Review function.  Also select between MACRO flash and FAR flash when camera is in Flash mode and using External Flash. | 9. VIDEO OUT jack |
| | 10.Tripod socket |

15

# Mode dial
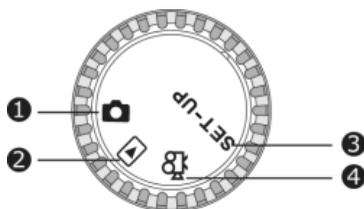


1. Record mode
2. Playback mode (Review)
3. Setup mode
4. Movie mode

| | Mode | Description |
|---|---|---|
| ◘ | Record Mode | Use this mode to capture still images. |
| ▶ | Playback mode (Review) | Use this mode to view images & videos, delete images & video clips, view a slide show, view thumbnail displays. |
| SET-UP | Setup mode | Use this mode to adjust camera settings and Land & Sea exposure modes. |
| 🎥 | Movie mode | Use this mode to record video (movie) clips. |

## LED indicators

| Indicator | Status | Description/Activity | Sound |
|---|---|---|---|
| LED Indicator | Solid red | The camera is powering up. | No |
| LED Indicator | Blinking red | Camera system error. | Yes *(3) |
| LED Indicator | Solid red | Charging the flash. | No |
| LED Indicator | Blinking red | Image is being recorded to the memory card. | No |
| LED Indicator | Blinking red | USB communication/transfer in progress. | No |
| LED Indicator | Solid green | The camera is ready to record images (or movies). | Yes *(1) |
| Self-timer Indicator | Blinking red | The self-timer function is activated. | Yes *(1) |
| — | — | Error message. | Yes *(3) |
| — | — | Valid button event. | Yes *(1) |

*(1) The camera sounds one beep.
*(3) The camera sounds three beeps.

16

# LCD monitor information in Record mode

These indicators are displayed when recording still images: in Land mode*

Land mode
Sea mode
Flash mode

❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽

0008  ❾
Ⓛ  ❿
⓫
⓬
ISO  ⓭
08:00  ⓮
MACRO/FAR  2002/10/01  ⓯
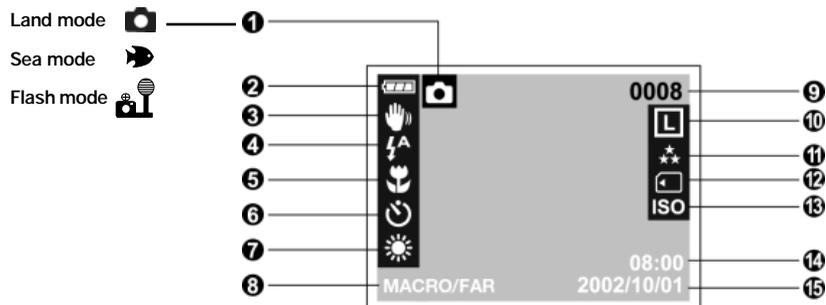
**1. Exposure Program mode**

  Land mode

  Sea mode

  Flash mode

**2. Battery level**

  Full battery power

  Medium battery power

  Virtually no battery power

**3. Slow shutter speed warning**

**4. Flash mode**

  ⚡ᴬ  Auto flash

  Red-eye reduction

  ⚡  Fill flash (on)

  Flash off

**5. Macro mode**

**6. Self-timer mode**

**7. White balance (no indication for auto white balance)**

  Daylight

  Cloudy

  Sunset

  Tungsten

  Fluorescent

**8. External Flash Exposure Modes**
**Macro** - For correct image exposure inside 2 feet (60cm) shooting distance when using External Flash.
**FAR** - For correct image exposure beyond 6 feet (1.8m) shooting distance when using External Flash.

**9. Possible number of shots (at the current size and quality settings)**

**10. Image size**

  Ⓛ  2048 x 1536 pixels

  Ⓜ  1024 x 768 pixels

  Ⓢ  640 x 480 pixels

**11. Image quality**

  Super fine

  Fine

  ★  Normal

**12. Card indicator**

**13. ISO speed**
  AUTO
  100
  200
  400

**14. Time (24-hour-format)**

**15. Date (year-month-day)**
*NOTE: only some indicators are displayed when camera is set to Sea or Flash modes.*

17

These indicators are displayed when recording video clips:

**1. Movie mode**

**2. Battery level**
- Full battery power
- Medium battery power
- Virtually no battery power

**3. Recordable movie time**

**4. Card indicator**

**5. Time (24-hour-format)**

**6. Date (year-month-day)**

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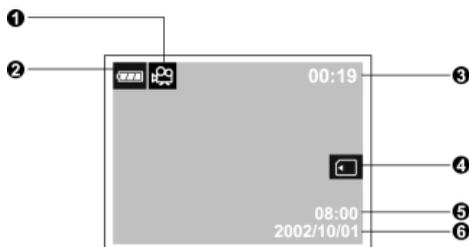
These indicators are displayed when playing images back:

**1. Battery level**
- Full battery power
- Medium battery power
- Virtually no battery power

**2. Protect indicator**

**3. DPOF indicator**

**4. Folder number and image number**

**5. Card indicator**

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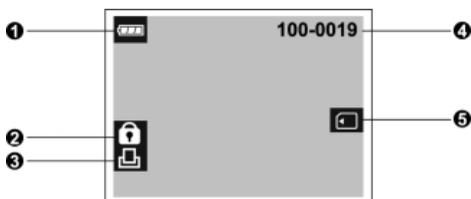
These indicators are displayed when playing video clips back:

**1. Movie mode**

**2. Battery level**
- Full battery power
- Medium battery power
- Virtually no battery power

**3. Count**

**4. Folder number and image number**

**5. The first frame of the movie**

**6. Card indicator**
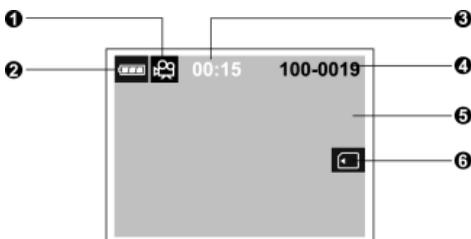
# GETTING STARTED

You can use either 2 AA size batteries (High-Energy Alkaline, Ni-MH, Lithium) or an AC power adapter (optional accessory) to power the camera. Battery power is convenient for recording images or video clips while AC adapter power is recommended for transferring images to your computer.

## Installing the batteries

1. Make sure the camera is off.
2. Slide the battery/SD card cover in the direction of the OPEN arrow.
3. Insert the batteries according to the correct polarity marks (+ or -).
4. Close the battery/SD card cover firmly.
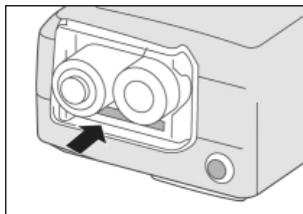
### NOTE

- We recommend Sealife Ni-MH batteries for long lasting operation.
- If you won't be using the batteries for an extended period of time, remove them from the camera to prevent leaks or corrosion.
- Never use manganese batteries.
- Never use different types of batteries (together) or mix old and new batteries.

## Using the AC power adapter (optional accessory)

1. Make sure the camera is off.
2. Open the DC IN jack cover and connect one end of the AC power adapter to the DC IN jack on the camera.
3. Connect the other end to an electrical outlet.
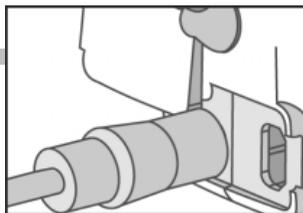
### NOTE

- Make sure to use only the specified AC power adapter (3.3 DC volt) for the camera. Otherwise, it may cause damages to the camera, which is not covered under the warranty. SeaLife item #SL13132.
- To prevent unexpected auto power off resulting from no battery power left during the process of transferring your images to the computer, use the AC power adapter as a power supply.

19

## Loading a SD memory card (optional accessory)

The camera comes with 8MB of internal memory, allowing you to store images and video clips in the camera. However, you can expand the memory capacity by using an optional SD memory card so that you can store additional images and video clips.
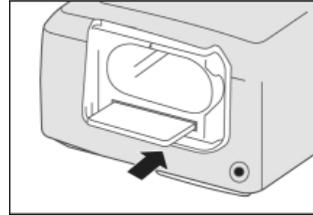


1. Make sure the camera is off.
2. Slide the battery/SD card cover in the direction of the OPEN arrow.
3. Insert the SD memory card.
   - ■ The front side of the memory card (printed arrow) should face towards the front side of the camera.
   - ■ If the card cannot be inserted, check the orientation.
4. Close the battery/SD card cover.
   - ■ To remove the SD memory card, make sure the camera is off. Open the battery/SD card cover. Press lightly on the edge of the memory card and it will eject.

### 📝 NOTE

- To prevent valuable data from being accidentally erased from an SD card you can slide the write protect tab (on the side of the SD memory card) to "LOCK."
- To save, edit, or erase data on an SD memory card, you must unlock the card.



LOCK — Write protection unlocked

LOCK — Write protection locked
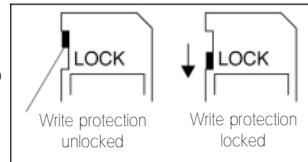
## Attaching the strap

To prevent accidental dropping of the camera, always use the strap.

1. First thread the small loop of the wrist strap through the strap eyelet on the camera and then pull the large loop through the small loop until the strap is firmly secured.
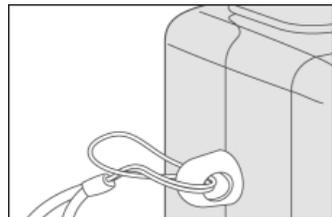


### 📝 NOTE

- Remove wrist strap from camera before inserting into underwater housing.

# Choosing the language

1. Select a language that you prefer by using the ▲/▼ button.
2. Press the **OK** button to confirm.

|  |  |
| --- | --- |
| **SETUP** | **3/3** |
| Language | |
| ▲ | |
| **English** | |
| ▼ | |
| **BACK:** ◀ | **SET:** OK |
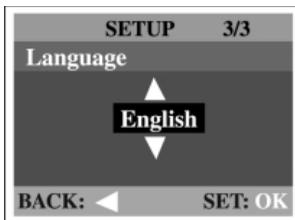
📷 NOTE

- The language setting will be retained even if the camera is turned off.
- The provided languages are [English], [Français], [Deutsch], [Español], [Portugués], [Italiano], [ 日本語 ], [ 简体中文 ], and [ 繁體中文 ]

# Setting the date and time

Follow these steps to set the correct date and time.

1. Turn mode dial to Setup mode.
2. Select Date Setup from menu option.
3. Enter the values of the year, month, day and time fields by using the ▲/▼ button.
   Press **OK** after all field is set.

   ■ To increase a value, press the ▲/ ▶ button.

   ■ To decrease a value, press the ▼/◀ button.

|  |  |
| --- | --- |
| **SETUP** | **2/3** |
| Date setup | |
| ▲ | |
| 01 /01/2003 | |
| ▼ | |
| 12:00 | |
| **BACK:** ◀ | **SET:** OK |
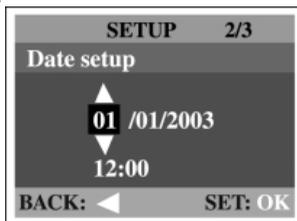
📷 NOTE

- It is necessary to set the date/time after removing batteries or AC adapter.

# Setting the image resolution and quality

Resolution and quality settings determine the pixel size (dimension), image file size, and compression ratio for your image. These settings affect the number of images that can be stored in internal memory, or on an SD memory card.

Higher resolution and higher quality images offer the best photographic results but take up more memory space. High resolution/quality settings are recommended for printed output and situations requiring the finest detail. Lower resolution/quality images take up less memory space and may be quite suitable for sharing images via e-mail, in a report, or on a web page.

To change image resolution or image quality, perform the steps below:

1. Turn the mode dial to 🔲 mode and power on the camera.

2. Press the 🔳 button on the rear side of the camera.

   ■ The Record menu appears.

3. Select Image size or Quality by using the ▲ / ▼ button.

4. Press the ▶ button. Select the image size or image quality you prefer by using the ▲ / ▼ button.

5. Press **OK** to confirm. To exit the menu screen, press the 🔳 button.

| STILL IMAGE 1/2 |
| Image size |
| ⊔ **2048 x 1536** |
| Ⓜ 1024 x 768 |
| Ⓢ 640 x 480 |
| BACK: ◀          SET: OK |

| STILL IMAGE 1/2 |
| Quality |
| ✦ **Super fine** |
| ✦ Fine |
| ★ Normal |
| BACK: ◀          SET: OK |
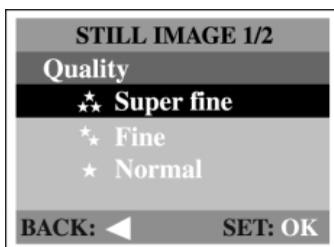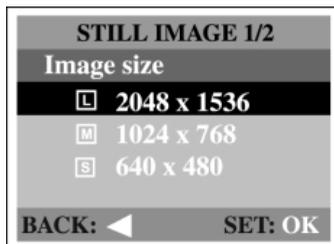
The table below shows the approximate shots that you can take at each setting based on 8MB internal memory or a 8MB SD memory card.

| Resolution | Quality | Compression ratio | 8MB internal memory | 12MB SD memory card |
|---|---|---|---|---|
| ⊔ 2048x1536 pixels | ✦ Super Fine | 4:1 | 3 | 145 |
| | ✦ Fine | 8:1 | 6 | 221 |
| | ★ Normal | 12:1 | 9 | 294 |
| Ⓜ 1024x768 pixels | ✦ Super Fine | 4:1 | 12 | 583 |
| | ✦ Fine | 8:1 | 24 | 712 |
| | ★ Normal | 12:1 | 36 | 855 |
| Ⓢ 640x480 pixels | ✦ Super Fine | 4:1 | 30 | 884 |
| | ✦ Fine | 8:1 | 60 | 1069 |
| | ★ Normal | 12:1 | 90 | 1283 |

* The above data shows the standard testing results. The actual capacity varies according to the shooting conditions and settings.

# RECORD MODE

## Taking pictures

Your camera is equipped with both an optical viewfinder and a 1.6" LCD monitor to compose images. Taking images using the optical viewfinder will conserve battery power. If your batteries are low, it is recommended that you only compose images by using the viewfinder. Using the LCD monitor you can compose images more accurately, but at the cost of battery consumption. Always use the image LCD for macro shots, to avoid parallax error.  The LCD image display must be turned on when Digital Zoom is used.

### Using the viewfinder

1. Open the lens cover.
2. Turn the mode dial to the ◯ mode.
3. Turn the camera on by pressing the ① button.
4. Compose your shot in the viewfinder.
5. Check "camera-ready" light is green.
6. Press and hold the shutter button until camera takes picture.
7. The picture you took will appear on the LCD display for 3 seconds with the message, "Delete this?"  If you press the shutter button when "Delete this?" message is displayed, _the picture will be deleted!_
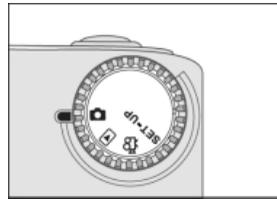
📷 NOTE

• Replace batteries if camera-ready light takes more than 15 seconds to recycle (after taking a picture).
• The camera-ready light blinks green while camera is processing a captured image

## Using the LCD monitor and QUICK REVIEW mode
1. Open the lens cover.
2. Turn the mode dial to ◘ mode.
3. Turn the camera on by pressing the ① button.
4. By pressing the button ▣ repeatedly in ◘ mode
   when quick view is ON, the LCD status will
   change cyclically.
   LCD on and OSD • LCD on • LCD off
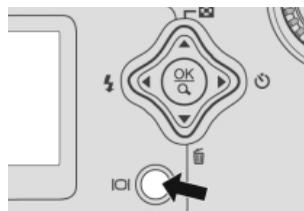
5. Press and hold LCD button for 3 seconds to activate Quick Review mode.
   The last picture taken will be displayed. Use ▲/▼buttons to scroll between
   pictures in memory.  Press and hold LCD button for 3 seconds to exit Quick
   Review mode.
6. When camera is set to Flash mode, the LCD button is used to select between
   MACRO flash mode and FAR flash mode. Select MACRO flash mode for
   shooting distance inside of 2′ (60cm) and FAR flash for shooting distance
   beyond 6′ (180cm).

### 📝 NOTE
- The image on the LCD monitor darkens when in strong sunlight or bright light.  This is not a malfunction.
- Using the LCD monitor for an extended period of time may reduce the number of shots you can take.  To conserve battery power and increase the number of shots you can take, turn the LCD monitor off and use the viewfinder instead.
- Always use the image LCD for macro shots to avoid parallax error.
- The LCD monitor must be on when Digital zoom is to be used.

## Setting Seascape focus for Land & Sea pictures

Set focus switch (located under lens) to the ▲/➡
position for the sharpest, most colorful pictures for
land *and* underwater.  The effective range is 6′ to
infinity, (1.8m to infinity), for land pictures and
3.5′ to infinity (1 meter to infinity) for underwater
pictures.
1. Open the lens cover, turn the mode dial to
   ◘ mode, and power on the camera.
2. Move the focus switch located on the front side of the camera to
   the ▲/➡ position.
3. Compose the picture.
4. Press the shutter button.
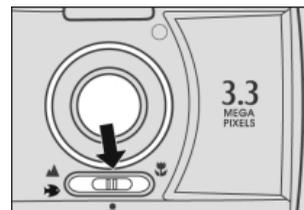
### 📝 NOTE
- Use the Seascape focus (▲/➡ position) for underwater pictures for sharp pictures from 3.5′ to infinity.  For sharp pictures inside of 3′, use SeaLife macro lenses/filters (optional).

# Using the macro focus setting 🌷

Use the macro focus setting to shoot a close-up of the subject on land, such as flowers or insects.

The effective range is between 2 to 3ft (60 to 90 cm).

1. Open the lens cover, turn the mode dial to the 📷 mode, and power on the camera.
2. Move the focus switch located on the front side of the camera to the 🌷 position.
   ■ The 🌷 icon appears on the LCD monitor and status LCD.
3. Compose the picture.
4. Press the shutter button.
   ■ To disable macro photography, slide the focus switch back to normal.
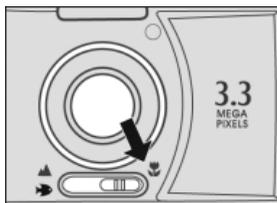
Camera's focus is now set to macro distance.

📷 NOTE
- When shooting a close-up in macro mode, use the image LCD monitor to compose your shot.
- Using optical viewfinder may result in parallax error.
- For land pictures taken at 3ft. shooting distance, take pictures in portrait and macro focus setting and compare the results.
- After a macro shot is taken DO NOT FORGET to reset the lens to the landscape position.
- We do not recommend setting focus to macro for underwater pictures. Use Landscape/Seascape focus for underwater.

# Using the Portrait focus setting 👤

The portrait focus setting, suitable for scenery shooting, is used when the distance to the subject is 3′ to 6′ (90cm to 1.8m).

1. Open the lens cover, then the mode dial to 📷 mode, and power on the camera.
2. Move the focus switch located on the front side of the camera to the 👤 position.
3. Compose the picture.
4. Press the shutter button.
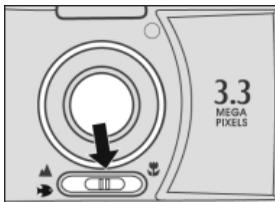
📷 NOTE
We do not recommend setting to focus to portrait for underwater pictures. Underwater pictures in portrait focus setting will only be sharp from 2′ to 5′ (60cm to 1.5m).

# Using the digital zoom

By using the digital zoom, images can be enlarged so that the subject appears closer. However, the more the image is enlarged, the grainier the image will become. The digital zoom function is only available when you set the LCD monitor and the digital zoom to ON. To capture a digitally zoomed image, perform the following steps:



1. Open the lens cover, turn the mode dial to ▢ mode, and power on the camera.
2. Turn the LCD monitor on by pressing the ▢ button.
3. Press **OK** to activate 2X digital zoom function.
   ■ The 2X icon appears on the LCD monitor.
   ■ To cancel the digital zoom function, press **OK** again.
4. Press the shutter button to capture a "zoomed" image.

---

📝 NOTE
────────────────────────────────────────

- You can only set the digital zoom at the resolution of 1600x1200 pixels; digital zoom is not available at the resolution of 800x600 pixels. When you play back a "digitally zoomed" image, the image size is 800x600 pixels.
- The more the image is enlarged, the more pixilated (grainier) the image.
- Digital zoom cannot be used in the movie mode.
- The digital zoom default setting is zoom off. To turn the digital zoom on, set the camera to ▢ mode, press the menu button and select digital zoom.

# Using the self-timer

The self-timer duration is 10 seconds. After the activation of the self-timer by pressing the shutter button, the self-timer lamp starts blinking slowly for 7 seconds and then blinking faster for the rest of 3 seconds. This allows you to get into the scene when taking group images.

1. Secure the camera to a tripod or place it on a stable surface.
2. Open the lens cover, turn mode dial to the ▢ mode, and power on the camera.
3. Press the ↻ button.
   ■ The ↻ icon appears on the LCD monitor.
4. Compose the picture.
5. Press the shutter button.
   ■ The self-timer function is activated.
6. After ten seconds, the camera takes an image.
   ■ To cancel self-timer photography at any time, press the shutter button to disrupt the sequence.
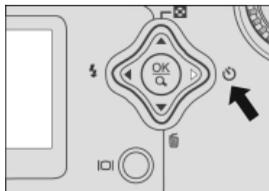
### 📷 NOTE
• After one shot is taken, the self-timer mode is turned to off.

# Using the flash

The flash is designed to function automatically when lighting conditions warrant the use of flash. You can take an image using a flash mode suitable to your circumstances. If you change the flash mode, the camera will retain that setting even if the camera is turned off.

1. Open the lens cover, turn the mode dial to the ▢ mode, and power on the camera.
2. Press the ⚡ button located on the rear side of the camera repeatedly until your desired flash mode appears.
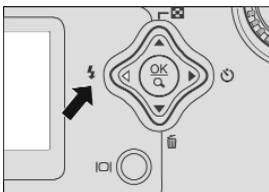
### 📷 NOTE
• Flash setting can only be changed in Land or Sea Exposure modes, not in External Flash mode.  In External Flash exposure mode the camera's flash will always fire.

# Flash Modes

The camera has four flash modes: Automatic Flash (default), Red-Eye Reduction, Fill Flash (on), and Flash Off.  The modes appear cyclically when you press the button on the rear side of the camera.  The table below will help choose the appropriate flash mode:

| Flash Mode | Description |
|---|---|
| [ ☇ ]  Auto Flash | The flash fires automatically according to the ambient conditions.  Select this mode for general photography. |
| [ ☇ ]  Red-eye Reduction | The flash emits a precursor-flash before the main flash fires.   This causes the pupil in the human eye to constrict, reducing the red-eye.  Select this mode when taking pictures of people and animals in low-light conditions. |
| [ ⚡ ] Fill Flash (on) | The flash will always fire regardless of the surrounding brightness.  Select this mode for recording images with high contrast   (backlighting) and deep shadows.  Also known as forced flash. |
| [ ⚡ ] Flash Off | The flash will not fire.  Select this mode when taking images in a place where flash photography is prohibited, or when the distance to the subject is beyond the effective range of the flash. |

📝 NOTE

- You can also turn the flash on and off from the record menu.
- When camera is set to External Flash Exposure mode the flash is always on and can not be turned off.  This is necessary to automatically trigger the external slave flash.

# Taking pictures manually

You can manually adjust conditions such as EV compensation, white balance, or ISO speed when taking pictures. For EV compensation, white balance, or ISO speed information, refer to Exposure, White balance, or ISO in the Record menu. To take pictures manually:

1. Open the lens cover, turn the mode dial to ◘ mode, and power on the camera.
2. Press the ▣ button.
3. Move to Exposure, White balance, or ISO by using the ▲ / ▼ button.
4. Press the ▶ button to enter the sub-menu.
5. Change the settings by using the ▲ / ▼ button and then press **OK**.
6. Compose the picture.
7. Press the shutter button.

```
◀  STILL IMAGE 1/2  ▶
Image size              ▢
Quality                 ⁎⁎
Exposure          0  EV
White balance       Auto

EXIT: MENU   PAGE: ◀▶
```

```
◀  STILL IMAGE 2/2  ▶
Digital zoom         On
ISO                 Auto
Quick view           On
LCD brighness         0

EXIT: MENU   PAGE: ◀▶
```
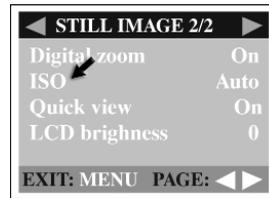
## 📝 NOTE

• For more details on how adjusting the above settings effect the pictures, please refer to menu options located on page 37.

## PLAYBACK MODE (Review images)

In the ▶ mode, you can view, magnify, delete images, play video clips, or run a slide show. Playback mode also provides a thumbnail image display, allowing you to quickly search for the image you want.

## Viewing images

You may view your images without opening the lens cover since the lens is not used for playback. The camera lens is protected during playback.

1. Turn the mode dial to the ▶ mode and power on the camera.

2. Select the image that you want to view by using the ◀/▶ button.

   ■ To view the previous image, press the ◀ button.

   ■ To view the next image, press the ▶ button.

   ■ Pressing the ▢ button displays detailed information about the picture such as image size, ISO speed, time and date.

### 📓 NOTE

- If there is no image stored in the internal memory or on the memory card, "NO IMAGES" message will appear on the LCD monitor.
- You can also view your images on the TV screen.  Connect one end of the video cable to the video out jack of the camera and connect the other end to the video input of your TV.  Turn the mode dial to the ▶ mode and then turn on both TV and camera.
- When lens cover is closed and the mode dial is set to record image 🔲 mode, you will also be able to playback images.

# Zoom Playback

While reviewing your images, you may enlarge a selected portion of an image. This magnification allows you to view fine details.

1. Turn the mode dial to the ▶ mode and power on the camera.
2. Select the image that you want to view by using the ◀/▶ button.
3. Enlarge the image by pressing **OK**.
   - ■ Pressing **OK** once magnifies the image to 2X. Pressing it again magnifies the image to 4X.
4. To view the different portion of the enlarged image, press the ▲/▼/◀/▶ button.
5. To return to the regular display from 4X-enlarged status, press **OK** again.
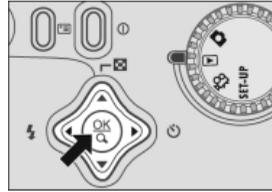
# Displaying thumbnail images

This function allows you to view nine thumbnail images on the LCD monitor simultaneously so you can quickly scan for a particular image.

1. Turn the mode dial to the ▶ mode and power on the camera.
2. Press the ▨ button.
   - ■ Nine thumbnail images appear on the LCD monitor (assuming there are nine or more images in the memory).
   - ■ To view a full-sized image, press **OK** after selecting it by using the ▲/▼/◀/▶ button.
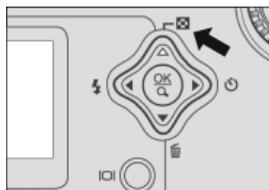
# Slide show display

The slide show function enables you to play your images back automatically in sequential order as a slide show. This is a very useful and entertaining feature for reviewing recorded images and for presentations.

1. Turn the mode dial to ▶ mode and power on the camera.
2. Press the ▤ button and move to Slide show by using the ▲/▼ button.
3. Press the ▶ button.
4. Set the playback interval by using the ▲/▼ button and then press **OK**.
   - ■ The slide show starts, displaying your images on the LCD monitor one by one with the set interval.
   - ■ To stop the slide show display, press the ◀/▶ button.
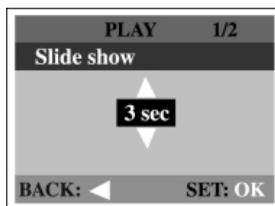
**NOTE**
- You can adjust the slide show display interval within the range of 1 sec. to 9 sec. in 2 sec. step.

# Protecting one image/video clip

You can protect the image/video clip from being accidentally erased by using the protect function in the Playback menu. Follow the steps below to perform protect function:

**Protecting one image/video clip**

1. Turn the mode dial to ▶ mode and power on the camera.
   - ■ The last image/video clip appears on the LCD monitor.
2. Select the image/video clip you wish to protect by using the ◀/▶ button.
3. Press the 🔲 button. Select Protect by using the ▲/▼ button.
4. Press the ▶ button. Use the ▲/▼ button to select One image and then press the ▶ button.
   - ■ Once the image/video clip is protected, the protection icon will display on the protected image/video clip.
   - ■ To protect all images, select All images in this step.
5. Select Lock by pressing the ▲/▼ button and then press **OK**.
   - ■ Once the image/video clip is protected, the protection icon will display on the protected image/video clip.

**Removing protection from one image/video clip**

1. Perform the steps above 1 to 4 in "Protecting one image/video clip."
2. Select Unlock by pressing the ▲/▼ button and then press **OK**.

✎ NOTE

• Use of the format function will erase protected images/video clips. For more information about the format "Function" refer to format in the set-up menu.

# Setting DPOF

DPOF allows you to embed printing information on your memory card.  By using DPOF, you can select an image to be printed and then specify how many prints you would like.  Take your memory card to a DPOF enabled printer that accepts SD memory cards. The DPOF/card-compatible printer will read the embedded information on the memory card and print your images as specified. To set DPOF:

1. Turn the mode dial to ▶ mode and power on the camera.
2. Press the ▣ button.  Select DPOF by using the ▲ / ▼ button.
3. Press the ▶ button.  Select the option you prefer by using the ▲ / ▼button.
4. Press the ▶ button.  Make the setting by pressing the ▲ / ▼ button and then press **OK**.

■ The DPOF icon will appear on the DPOFsetimage.
The DPOF menu options:
[Quantity] : sets image quantity from 0~9

|  |  |  |
|---|---|---|
| PLAY | | 1/2 |
| **DPOF** | | |
| **Quantity** | | **0** |
| BACK: ◀ | | CHANGE: ▶ |
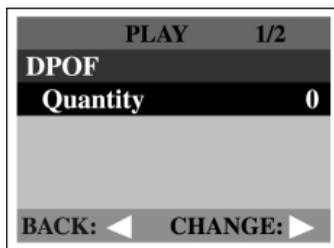
# Deleting images/video clips

To delete one image/video clip at a time, use the button on the rear side of the camera.  To delete all images/video clips at once, go to Delete all in the Playback menu.

**To delete one image/video clip at a time:**
1. Turn the mode dial to ▶ mode and power on the camera.
2. Select unwanted image/video clip by using the ◀ / ▶ button and then press the 🗑 button.
3. When delete message appears, select [Yes] by using the ◀/ ▶ button and then press **OK**.
   ■ The next image/video clip appears.
   ■ If you want to cancel the deletion, select [No].
4. Continue the deletion if necessary. If all images are deleted, [ ⓘ "No image" ] will pop up.  To exit this screen, turn the mode dial to the other mode.
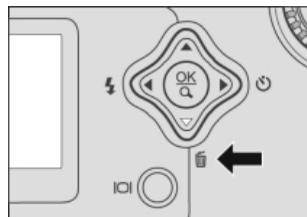
**To delete all images/video clips at once:**

1. Turn the mode dial to ▶ mode and power on the camera.
2. Press the ▣ button on the rear side of the camera.
3. Select Delete all by using the ▲/▼ button.
4. Press the ▶ button.
5. Select [Yes] by using the ▲/▼ button and then press **OK**.
   - ■ A progress bar displays, showing the process of deletion. After that, [ⓘ "No image"] pops up. Turn the mode dial to the other mode to exit the screen.

| PLAY 1/2 |
|---|
| Protect |
| **Delete all** |
| Slide show 3sec |
| LCD brighness 0 |
| EXIT: MENU  CHANGE: ▶ |

**ⓘ No image!**
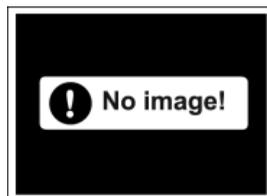
📷 NOTE
- If you want to delete the image or video clip stored in the internal memory, do not insert the memory card in the camera.

## How to use the Instant Delete feature:

You can instantly delete a picture immediately after taking the picture

**To instantly delete a picture:**

1. After taking a picture, the LCD will display a "DELETE THIS?" message with the last picture taken.
2. If you want to delete the image displayed, press the shutter button while the "DELETE THIS?" message is displayed.
3. The LCD will display a "DELETE IMAGE" message and the image is now deleted.
4. If you do not want to delete the image, do not press the shutter button when "DELETE THIS?" is displayed.

📷 NOTE
- You can disable the Instant Delete feature by turning off the Quick View feature. See page 47 for more details..

## MOVIE MODE

### Recording video clips

The movie mode allows you to record video clips at
the resolution of 320 x 240 pixels.

1. Open the lens cover, turn the mode dial to the
   mode, and power on the camera.
   ■ The recordable movie time displays on the
   status LCD and the LCD monitor.

2. You can start recording a video clip by pressing
the shutter button.
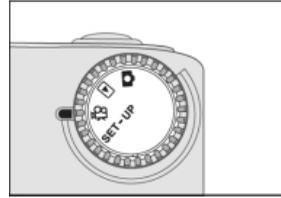
   ■ The elapsed time displays on the LCD monitor while recording a
   video clip.

   ■ To stop recording, press the shutter button again.

### NOTE

• In movie mode, resolution/quality, macro, self-timer cannot be set or
  activated.
• In movie mode, the flash mode is automatically set to [OFF].
  If the "low light" message appears on the LCD, use a video light or move to
  a brighter environment.

# Viewing video clips

To view the recorded video clips, follow the steps below.

1. Turn the mode dial to ▶ mode and power on the camera.
2. Select the video clip that you want to view by using the ◀/▶ button.
3. Press **OK** to start.
   - ■ To pause playback at any time, press **OK** again.
   - ■ To stop playback, press the ◀/▶ button.

Pressing **OK** or the ◀/▶ button while playing back the video clip will change the status as follows:
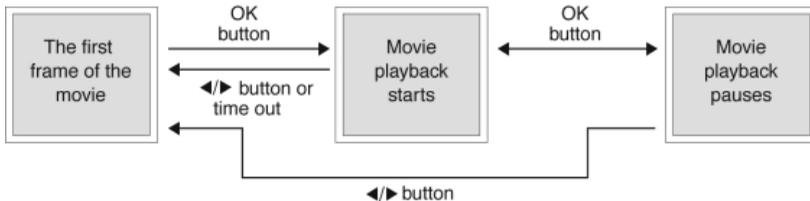


🖼 NOTE

- The zoom function cannot be activated while playing the video clip back.
- To play the video clip back on the computer, we recommend that you use the "QuickTime Player."  This software is free of charge, compatible with Mac and Windows computers and can be downloaded from the Apple Web site at www.apple.com.  For QuickTime Player usage, please refer to its on-line help for more information.

# TRANSFERRING RECORDED IMAGES
# TO YOUR COMPUTER

You can share recorded images/video clips with your family or friends via e-mail or post them on the Web. First, you need to connect the camera to your computer by using the USB cable and then transfer the images/video clips.

To transfer images/video clips from the camera to your computer, follow the steps below.
**Step 1:** Installing the USB driver (see page 39)
**Step 2:** Connecting the camera to your computer (see page 39)
**Step 3:** Downloading images/video clips (see page 40)

| | System requirements (Windows) | System requirements (Macintosh) |
|---|---|---|
| CPU | Pentium 166 MHz processor or higher | PowerPC G3/G4 |
| OS | Windows 98/98SE/Me/2000/XP | OS 8.6 or later |
| Memory | 32MB RAM (64MB recommended) | 32MB RAM (64MB recommended) |
| Free Space on Hard Disk | 128 MB hard disk space | 128 MB hard disk space |
| Required Devices | A CD-ROM drive An available USB port | An available USB port A CD-ROM drive |
| Color Monitor | Color monitor (800x600, 24-bit or higher recommended) | Color monitor (800x600, 24-bit or higher recommended) |

## Step 1: Installing the USB driver on Windows computers

The USB driver on the supplied CD-ROM is only needed for Windows 98. Installing the USB driver on computers running Windows 2000/ME/XP is not necessary.

1. Insert the CD-ROM packaged with the camera into the CD-ROM drive. The welcome screen appears.
2. Click "Install USB Driver." Follow the on-screen instructions to complete the installation. After the USB driver installation is complete, restart your computer.

## Installing the USB driver on Macintosh computers

Mac OS 8.6 users must install a USB driver. For Mac OS 9.0 or higher, the computer will automatically recognize the camera and load its own USB drivers.

1. Insert the CD-ROM packaged with the camera into the CD-ROM drive.
2. Select and double-click "Digital Camera Driver Installer ."
3. Select "Install Location" and click "Install."
4. Follow the on-screen instructions to complete the installation and restart your computer.

## Step 2: Connecting the camera to your computer

1. Connect one end of the USB cable to an available USB port on your computer.
2. Connect the other end of the USB cable to the USB connector on the camera.
3. Turn the camera on.
4. Look for a new "removable disk" appearing in the "My Computer" window. Your recorded images/video clips will be in a folder on this "removable disk." (For Mac users, double-click the "untitled" disk drive on the desktop.)
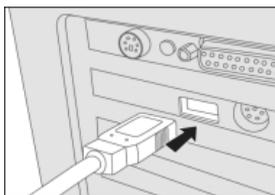
# Step 3: Downloading images/video clips

When the camera is turned on and connected to your computer, it is considered to be a disk drive. You can download images/video clips by copying them from the "removable disk" ("untitled" disk on a Macintosh) to your hard drive or to another kind of disk.

## For computers running Windows

Open the "removable disk" by double clicking on it.  Double click on the folder. Your images are inside the folder(s).  Select the images that you want, then choose copy from the Edit menu.  Open the destination location and choose Paste from the Edit menu.  You may also drag and drop image files from the camera to a desired location.

## For computers running Mac OS

Open the "untitled" disk window and the hard disk or the destination location. Drag and drop from the camera disk to the desired destination.

### NOTE

• It is recommended that you use a 3.3 volt AC power adapter as a power supply for the camera while transferring images/video clips from the camera to you computer since camera power maybe cut off unexpectedly if the batteries run out.

## INSTALLING MGI PHOTOSUITE®

MGI PhotoSuite is a very user-friendly image-editing program.  With PhotoSuite, you can easily retouch, compose and organize your images.   It contains a variety of templates, such as photo frames, birthday cards, calendars and more. Get your images ready and go explore this amazing program.

To install MGI PhotoSuite®:

1. Insert the CD-ROM packaged with the camera into the CD-ROM drive. The welcome screen appears.
2. Click "Install MGI PhotoSuite®."  Follow the on-screen instructions to complete the installation.



📷 NOTE

- To use MGI PhotoSuite® to edit and retouch your recorded images, please refer to the on-line help of this software as a guide.
- For Windows 2000/XP users, make sure to install and use the MGI PhotoSuite® in the "Administrator" mode.
- PhotoSuite® is not supported on the Mac.

# INSTALLING MGI PHOTOVISTA®

MGI PhotoVista® is an easy-to-use program that lets you create spectacular 360° panoramic images in a snap.  When you view these panoramas, you get the experience of being totally immersed in a realistic environment.  PhotoVista's powerful engine quickly and automatically stitches images together, and its intuitive interface will let even a novice get great results in minutes.



To install MGI PhotoVista®:

1. Insert the CD-ROM packaged with the camera into the CD-ROM drive.  The welcome screen appears.
2. Click "Install MGI PhotoVista®." Follow the on-screen instructions to complete the installation.

📷 **NOTE**

- To use MGI PhotoVista® to create spectacular 360° panoramic images, please refer to the on-line help of this software as a guide.
- For Windows 2000/XP users, make sure to install and use the MGI PhotoVista in the "Administrator" mode.
- PhotoVista® is not supported on the Mac.

# INSTALLING THE USER'S MANUAL

In an effort to conserve energy and preserve our world's forests and wildlife, this manual is only provided on the CD-Rom in PDF format. We suggest you read through the instruction manual and print only those pages you need for future reference. The only requirement for viewing the User Manual on the CD ROM is that you have Acrobat Reader installed on your computer.



For Windows users:
1. Insert the CD-ROM that came with the camera into your CD-ROM drive. The welcome screen appears.
2. Click "Install User's Manual." Follow the on-screen instructions to complete the installation.

For Mac users:
1. Insert the CD-ROM packaged with the camera into your CD-ROM drive.
2. Select and double-click "Manual."
3. Select and double-click the language you prefer.
4. Drag and drop the PDF file from the current location to the destination location. View the user's manual by opening it.

## INSTALLING ACROBAT READER

For Windows users:

1. Insert the CD-ROM that came with the camera into your CD-ROM drive. The welcome screen appears.

2. Click "Install Acrobat Reader." Follow the on-screen instructions to complete the installation.



For Mac users:

1. Insert the CD-ROM that came with the ca-mera into your CD-ROM drive.
2. Select and double-click "Acrobat Reader."
3. Select and double-click the language you prefer.
4. Double-click "Reader Installer."
5. Follow the on-screen instructions to complete the installation.

# MENU OPTIONS

## Record menu

You can use the Record menu to select image size, image quality, ISO speed, Quick View or digital zoom. You can also adjust exposure, white balance, or LCD brightness in the Record menu. The Record menu even allows you to enable digital zoom or quick view function. To access the Record menu, turn the mode dial to ◘ mode and then press the ▤ button. Scroll through the menu options by using the ▲/▼ button.

### Image size

For more information about setting image size, refer to "Setting the image size and quality" located on page 45.

```
◄  STILL IMAGE 1/2   ►
Image size              Ⓛ
Quality                 ⁑
Exposure        0   EV
White balance       Auto

EXIT: MENU  PAGE: ◄►
```

### Quality

For more information about setting image quality, refer to "Setting the image size and quality" located on page 45.

### Exposure

Your camera adjusts the exposure of each scene automatically. However, when the subject is too dark or too bright, you can manually adjust the camera to make the subject appears brighter or darker. This is called EV compensation. The EV compensation of your camera can be adjusted from -1.8EV to +1.8EV. To select the EV compensation you wish, first press the ▶button. Then increase or decrease the EV compensation depending on what you need by using the ▲ or the ▼ button and press **OK**.

```
◄  STILL IMAGE 2/2   ►
Digital zoom           On
ISO                  Auto
Quick view             On
LCD brighness           0

EXIT: MENU  PAGE: ◄►
```
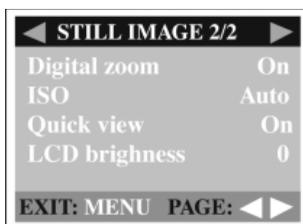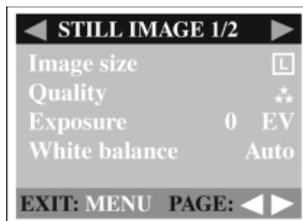
**You may want to increase (+)**
**EV Compensation for:**
■ Imaging of printed text (black characters on white paper)
■ Backlit portraits, like a person with bright background
■ Very bright scenes (such as snowfields) and highly reflective subjects
■ Shots made up predominantly of the sky

**Decrease (-) EV Compensation for:**
■ Spot lighted subjects, particularly against dark backgrounds
■ Imaging of printed text (white characters on black paper)
■ Scenes with low reflectivity, such as shots of green or dark foliage

## White balance

Your camera adjusts the white balance of each scene automatically. However, the images that your camera captures will appear different under different lighting conditions (daylight, cloudy, sunset, tungsten, fluorescent lights). Unlike your eyes, which can easily adjust to different lighting conditions (lighting temperatures), a digital camera cannot always differentiate between lighting types. Under some lighting conditions the image may appear in strange shades. If that occurs you may change the white balance setting by specifying a lighting condition (temperature) most appropriate for your scene. To set the white balance, first press the ▶ button. Then choose the white balance you prefer by using the ▲ / ▼ button and press **OK**.

| | |
|---|---|
| [Auto] | : adjusts the white balance automatically |
| [ ☀ Daylight] | : records outdoors on a bright day |
| [ ☁ Cloudy] | : records under cloudy or shady sky |
| [ ● Sunset] | : records a sunset |
| [ ☀ Tungsten] | : records under tungsten lighting condition |
| [ ☰ Fluorescent] | : records under fluorescent lighting condition |

## Digital zoom

You can take shots with the digital zoom by activating the digital zoom function. To enable this option, first press the ▶ button. Then select [On] by using the ▲ / ▼ button and press **OK**.

## ISO

The ISO speed decides the sensitivity to the lights. The higher the ISO number is, the more sensitive it is to the lights. When recording under dark situations or recording a fast-moving subject, use a high-number setting. When recording high-quality images, use a low-number setting. To set the ISO speed, first press the ▶ button. Then choose the ISO speed you prefer by using the ▲ / ▼ button and press OK.

| | |
|---|---|
| [Auto] | : adjusts the ISO speed automatically |
| [100] | : equivalent to ISO 100 |
| [200] | : high-sensitive photography, equivalent to ISO 200 |
| [400] | : high-sensitive photography, equivalent to ISO 400 |

📷 NOTE

- The lower the ISO number the less grainy the picture will be. A higher ISO number may be more grainy.
- When camera is set to External Flash mode, keep the white balance in the Auto setting. The camera is already programmed to adjust for the color of the External Flash.

**Quick view**

By enabling quick view, you can temporarily view the image on the LCD monitor right after you take a picture. After a temporary preview, the camera returns to ■ mode automatically. To enable quick view, first press the ▶button. Then select [On] by using the ▲ / ▼ button and press OK.

📖 NOTE
• During the Quick view, you have the option to delete the image. See page 35 for details.
• Turning the Quick View off will also turn off the Instant delete feature.

**LCD brightness**

This option adjusts the brightness of the LCD monitor. To adjust the LCD brightness, first press the ▶ button. Then increase or decrease the LCD brightness depending on what you need by using the ▲ or the ▼ button and press **OK**.

# Movie menu

You can use the Movie menu to adjust exposure, white balance, ISO speed, or LCD brightness. To access the Movie menu, turn the mode dial to 🎥 mode and then press the 🔲 button. Scroll through the menu options by using the ▲ / ▼ button. For more information about Exposure, White balance, ISO, or LCD brightness, refer to its correspondent description in the Record menu.



◀ **STILL IMAGE 1/2** ▶
Image size          ▫
Quality             ✦
Exposure        0  EV
White balance     Auto

**EXIT: MENU PAGE:** ◀ ▶
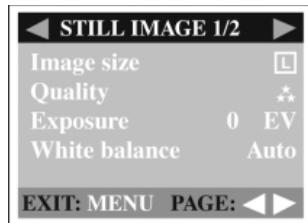
# Playback menu

Use the Playback menu to create an on-camera slide show, configure DPOF settings, or transfer images to a memory card.  You can also use the Playback menu to protect an image, delete all images at once, or adjust the LCD brightness.  To access the Playback menu, turn the mode dial to ▶ mode and then press the ▤ button. Scroll through the menu options by using the ▲ / ▼ button.

**Protect**
Refer to "Protecting one image/video clip" in PLAYBACK MODE.

**Delete all**
Refer to "Delete images/video clips" in PLAYBACK MODE.

**Slide show**
Refer to "Slide show display" in PLAYBACK MODE.

**LCD brightness**
Refer to LCD brightness in the Record menu.

**DPOF**
Refer to "Setting DPOF" in PLAYBACK MODE.

```
◄    PLAY    1/2 ►
Protect
Delete all
Slide show          3sec
LCD brighness          0

EXIT: MENU  PAGE: ◄ ►
```

```
◄    PLAY    2/2 ►
DPOF
Copy to card



EXIT: MENU  PAGE: ◄ ►
```

**Copy to card**
This feature allows you to copy your images from the camera's internal memory to a memory card.  However, you can only do this when the memory card is installed and the internal memory contains images.

To perform this function, first press the ▶ button.  Then select [Yes] by using the ▲ / ▼ button and press **OK**.  A progress bar displays, showing the process of coping.

# Setup menu

Select between Land & Sea exposure programs and other general camera preferences in the SET-UP mode.  Turn the mode dial to SET-UP mode and navigate to the option you wish to configure by using the ▲ / ▼ button.

**LAND & SEA® EXPOSURE PROGRAM SETTING**
Switch the mode dial to the SET-UP mode and navigate to the option you wish to configure by using the ▲ / ▼ button.
This unique camera offers the option to set the exposure program for land or sea (underwater) use.

| | | |
|---|---|---|
| 📷 | **Land:** | select LAND mode when using camera on land (above water) |
| 🐟 | **Sea:** | select SEA mode when using camera (inside underwater housing) underwater |
| 💡 | **Flash:** | select FLASH mode when using camera (inside underwater housing) with one or two external flash (es) |

## 📷 NOTE

- Camera is not waterproof and requires the use of the underwater housing when in or around water.
- To confirm Land & Sea Exposure program is set correctly, switch the mode dial to 📷 mode.  The top left of LCD will display one of the above 3 icons.

### Format

This option formats the internal memory (or memory card ) and erases all stored images and data. To perform the format function, first press the ▶ button. Then select [Yes] by using the ▲ / ▼ button and press **OK**. A progress bar displays, showing the progress of formatting.
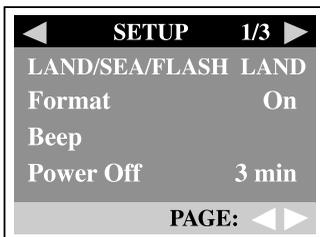
### Beep

The camera makes a sound (beep) each time you press the camera button if this function is enabled. Press the ▶ button. Select [On] or [Off] by using the ▲ / ▼ button and then press **OK**.
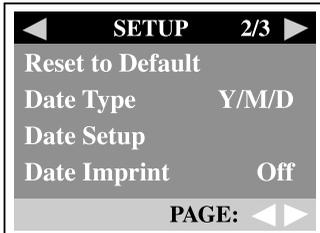
### Power off

If the camera goes unused for a certain period of time while the camera is powered on, the camera will switch to an idle mode, and even-tually turn itself off to conserve power.

```
┌──────────────────────────────────┐
│  ◀      SETUP      1/3  ▶         │
│  LAND/SEA/FLASH  LAND             │
│  Format              On           │
│  Beep                             │
│  Power Off         3 min          │
│                 PAGE: ◀ ▶         │
└──────────────────────────────────┘
```

```
┌──────────────────────────────────┐
│  ◀      SETUP      2/3  ▶         │
│  Reset to Default                 │
│  Date Type         Y/M/D          │
│  Date Setup                       │
│  Date Imprint        Off          │
│                 PAGE: ◀ ▶         │
└──────────────────────────────────┘
```

```
┌──────────────────────────────────┐
│  ◀      SETUP      3/3  ▶         │
│  Video Out         NTSC           │
│  Language                         │
│                                   │
│                                   │
│                 PAGE: ◀ ▶         │
└──────────────────────────────────┘
```
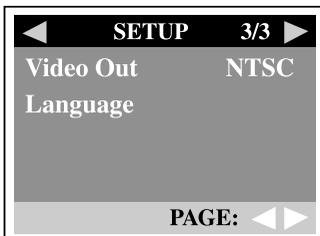
| Inactivity period (batteries) | Inactivity period (AC power adapter) | Camera status |
|---|---|---|
| 60 seconds | 60 seconds | stay idle |
| 3 minutes | 30 minutes | shut off |

If the camera is idle, re-activate the camera by pressing any button or switch the mode dial. If the camera has powered-off you must turn the camera on again by pressing the ⏻ button. The table (above) shows the default time settings for idle, and power-off. To change the power saving interval, first press the ▶ button. Then select the power-off interval you prefer by using the ▲ / ▼ button and press OK.

[3 min], [5 min], [10 min], [30 min]

**Reset to default**

If you wish to restore all camera settings to their original status, select this option and then press the ▶ button.  Select [Yes] by using the ▲ / ▼ button and then press **OK**.

The table below shows the default setting for each item.

| Item | Description |
| --- | --- |
| Image size | 2048 x 1536 pixels |
| Image quality | ✿ Super Fine |
| Flash | Auto |
| LCD brightness | 0 |
| Quick view | On |
| White balance | Auto |
| EV compensation | 0.0 |
| Slide show delay | 3 seconds |
| Auto power off | 3 minutes |
| Beep | On |
| LCD Monitor | On |
| Digital Zoom | Off |
| Date Imprint | Off |

**Date type**

You can select the date type that is imprinted on your image.  To set the date type, first press the ▶ button.  Then select one date type you prefer by using the ▲ / ▼ button and press **OK**.

[Y/M/D]
[D/M/Y]
[M/D/Y]

**Date setup**

After removing the batteries from the camera, the date and time will return to the default setting.  If this happens, reset the date and time when using the camera. For more information about the date setup, refer to "Setting the date and time."

**Date imprint**

If you set imprint function, your image will be displayed with date on it. To enable this function, first press the ▶button. Then select [Yes] by using the ▲ / ▼ button and press **OK**.

**Video out**

You can view your images on a TV. Remember to select correct video output type according to where you locate. Otherwise, there will be white lines on a stored image. To set this option, first press the ▶button. Then select the ▲ / ▼ button and press **OK**.

[NTSC]   : select this format when located in the U.S.A., Canada, Japan, Korea, Taiwan, Central America, or Mexico.
[PAL]    : select this format when located in Australia, Austria, Belgium, China, Denmark, Finland, Germany, Great Britain, Holland, Italy, Kuwait, Malaysia, New Zealand, Singapore, Spain, Sweden, Switzerland, Thailand, or Norway.

**Language**

This option allows you to select the language for the menus and the texts displayed on the LCD monitor. To set the language, refer to the section, "Choosing the language."

# CONNECTING THE CAMERA TO OTHER DEVICES



TV

VIDEO Cable

USB Cable

SD Memory Card

SD Card Reader

Computer

PCMCIA Adapter

Computer

Printer
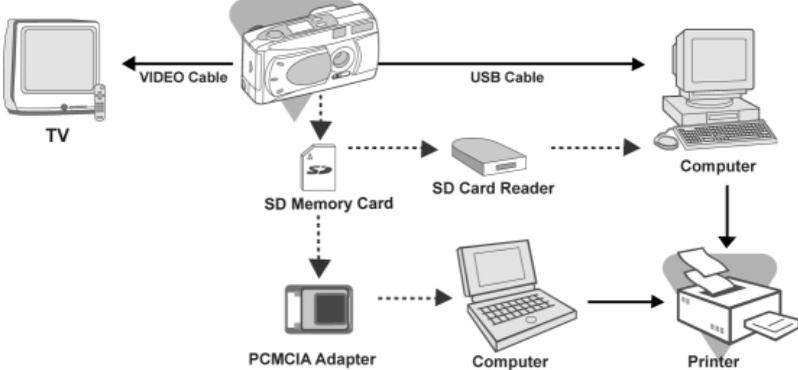
## CAMERA SPECIFICATIONS

| Item | Description |
|---|---|
| Image sensor | 3.3-Megapixel CCD |
| Image quality | Super-Fine/Large (2048 x 1536 pixels)<br>Fine/Medium (1024 x 768 pixels)<br>Normal/Small (640 x 480 pixels) |
| Recording media | 8MB internal memory;<br>SD memory card (optional) (up to 256MB capacity) |
| Lens | Fixed focal length: 7.9mm<br>Focusing range: Landscape---1.9m~infinity;<br>Portrait---0.9m~1.9m;<br>Macro---0.55m~0.9m<br>F-number: 3.5 |
| LCD monitor | 1.5" color TFT LCD monitor |
| Self-timer | 10-second delay |
| Zoom | 2X digital zoom |
| Exposure compensation | Auto;<br>Manual: -1.8 ~ +1.8EV (0.3EV step) |
| Exposure Program | Land, Sea or External Flash |
| White balance | Auto;<br>Manual: Daylight, Cloudy, Sunset, Tungsten,<br>Fluorescent |
| Compressed format | JPEG, Motion JPEG for video clip |
| Standards | JPEG, EXIF 2.1, DPOF 1.1, DCF 1.1, M-JPEG |
| Interface | DC IN jack, USB connector, VIDEO OUT jack<br>(NTSC or PAL) |
| Operating environment | Operation: 0˚C~40˚C, 15%~90% humidity<br>Storage: -20˚C~80˚C, 10~95% humidity |
| Power | 2 x AA Alkaline batteries,<br>2 x AA Ni-MH batteries,<br>AC power adapter (only use 3.3 volt DC output) |
| Tripod socket | Yes |
| Dimensions | 112 x 41 x 56 mm (W x H x D)<br>(4.4″ x 1.6″ x 2.2″) |
| Weight | Approx. 150g (5.2 ounces without batteries and the<br>SD memory card) |

*Design and specifications are subject to change without notice.*

# Underwater Housing Instructions

***Important:*** Please carefully read and understand these instructions **before** using camera and housing underwater.

**DC300/ DC310**



Front view of underwater housing

**DC300**



Backview of Dive-Easy housing

**DC300: SeaLife Reefmaster <u>Dive Easy</u> Housing (SL113)**

- Depth rated and tested to 200ft. (60M)
- Fully rubbered armored for water and shock protection.
- Includes Sportsfinder.
- Soft rubber grips.
- Optical glass lens port.
- Stainless steel hardware - corrosion proof.
- 3-button controls ( power, shutter and LCD on/off), for Dive-Easy housing.
- Accessory mount for adding one or two external flash (es)
- Snap-on lens port to quickly attach macro or wide angle lens.
- Leak check window let's you see if housing leaks while underwater.

**DC310**



Back view of Advanced housing

**DC310: SeaLife Reefmaster Advanced Housing (SL113)**

- All the above DC300 features plus 9-button controls and Mode dial.
- Controls power, shutter, LCD on/off, menu and navigation buttons.
- Mode dial allows access to record mode, playback mode, movie mode and set-up mode.

## MUST DO for underwater housing:

1. Read these instructions before using the underwater housing.
2. Do not exceed the depth rating printed on the lens port of the housing.
3. Keep main O-Ring perfectly clean.
   - Clean main O-ring with cleaning brush provided before every use. Do not remove O-ring. Do not grease O-Ring.
   - Store camera and housing only after careful cleaning and when totally dry.
   - Housing uses one large O-ring at housing sealing lid. Never use housing without O-ring in place.
   - If O-ring is damaged, contact the SeaLife Service Center. (See page 58). Do not continue using housing
   - O-ring must be perfectly clean (no sand, dirt or debris) before sealing housing.
   - Soak or rinse sealed housing with fresh water after use in salt water.
4. Carefully close lid to seal housing.
   - Make sure O-ring does not slip out of the groove when sealing.
   - Press lid firmly and tightly down into housing to ensure a waterproof seal.
5. Never let any moisture or dirt get inside housing when opening.
   - Only open and load the housing in dry cool air, such as inside an air-conditioned room.
6. For great underwater pictures you need:
   - Clear water conditions, control your buoyancy before taking picture, get as close as possible to subject (ideal distance is 2′ to 6′).
   - Use the SeaLife Macro Lenses/Filter for close-up pictures inside of 3.5′ with super details and vibrant colors. Minimum shooting distance without any macro lenses is 3.5 feet (107cm).
   - Use SeaLife External Flash to enhance colors and reduce backscatter.
7. Store housing at room temperature in a clean and dry place
   - Do not expose housing to direct sunlight for prolonged periods of time.
   - Do not store housing in hot locations, like the trunk of your car.

**Open view of housing**
**The housing uses one O-ring to
form a waterproof seal**
Contact SeaLife Service Center if
O-ring is damaged and requires
replacement.



---

Important:  Carefully inspect o-ring for salt, sand, hair, cuts, tears or other
damage.  Clean o-ring before every use.  Replace o-ring if damaged.

**If O-ring needs to be replaced, contact the SeaLife Service Center
at (856) 866-9192**

# Main O-ring and keeping a waterproof seal

The SeaLife housing uses one O-ring to form a waterproof seal. Every housing is tested for quality and a waterproof seal. It is your responsibility to maintain the housing and ensure it remains waterproof. Our research and testing shows that 99% of leaks are the result of not cleaning or caring for the O-ring.

⚠️ *Warranty does not cover a water-damaged camera unless it is clearly determined that a manufacturing defect caused the leak.*

- The O-ring must always be kept clean and checked for damage before every use.
- Carefully clean the housing surface that makes contact with the O-ring and inspect for scrapes and cuts. If the housing sealing area is damaged, contact the SeaLife Service Center.
- Never use the housing without the O-ring in place.
- If O-ring need replacement contact the SeaLife Service Center.
- Do not remove or lubricate the O-ring.
- The O-ring located in the housing lid groove is not glued in place. O-ring should not be removed unless sand, hair or other objects become trapped under O-ring. If O-ring must be removed use the other end of the cleaning brush to lift up O-ring and remove. Carefully inspect O-ring for cuts and damage. If this O-ring is removed, make sure it is carefully replaced. Do not twist or stretch O-ring. O-ring must be pushed into it's groove. Be careful not to pinch O-ring when closing housing.
- Each button assembly has an O-ring to keep a waterproof seal. It is normal to feel some resistance when pressing these buttons. If the button does not return to it's original position or if the button does not have a smooth action, contact the SeaLife Service Center. Do not attempt to disassemble or service the buttons.

**Quick waterproof test**

Wrap a small dive weight in a blue paper towel, place inside housing and close the lid to seal the housing. The blue paper towel makes it easier to see a leak. Make sure not to pinch the paper towel in the O-ring. Place the sealed housing in a tub of cold water for about one hour. No leaks should be present. If the housing shows sign of leaking, do not use the housing and contact the SeaLife Service Center for repairs.

**SeaLife Service Center, 97 Foster Road, Moorestown, NJ 08057
(856) 866-9192 - www.sealife-cameras.com/service.**

# SeaLife ReefMaster Underwater Camera Housing
# Front View

**Removable Sportsfinder**
*If the center appears as a circle, it is aiming at a point 4 feet/120cm from the lens.*

**Shutter Button**
*Record images and Delete Images when Prompted*

**Soft Rubber Armor Grips**

**Opening Tab**

**Built-in flash window**

**Docking Port for snap-on lenses**
*Macro 3x, 8x, 16x and wide angle lenses.*

**Connector for carry strap**

**Mount for External Flash or Macro Wand**

**Optical glass lens port**
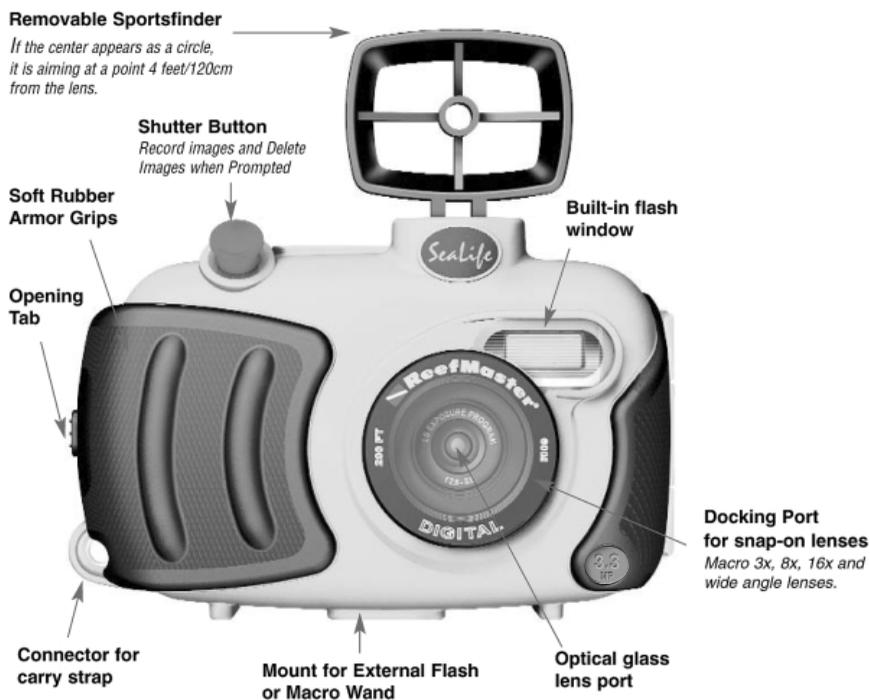
# SeaLife ReefMaster Underwater Camera Housing
# Rear View of DC300 Dive-Easy housing (item #SL113)

**Rubber Armored Body**

**Power Button**

**Indicator Light Window**

**Lid hinge**

**Monitor frame for attaching optional sunshade.**

**LCD monitor window**

**LCD monitor ON/OFF**
**External Flash Exposure control.** When camera is set to External Flash mode, press the LCD button to select between: **Macro Flash** - for optimal exposure of pictures inside 2′ shooting distance. **Far Flash** - for optimal exposure beyond 6′ shooting distance.

**Closing Latch**

**Leak Detection Window**

**Housing Serial #**
*(inside bottom)*

# SeaLife ReefMaster Underwater Camera Housing
## Rear View of DC310 Advanced housing (item #SL118)

**Mode dial**

Select between Record, Playback, Movie and Set-Up modes.

**Rubber Armored Body**

**Menu Button**

**Power Button**

**Indicator Light Window**

**Lid Hinge**

**Monitor frame for attaching optional sunshade**

**LCD monitor window**

**LCD monitor ON/OFF**
*Quick review (Press for 2 seconds)*

**External Flash Exposure control.**
When camera is set to External Flash mode, press the LCD button to select between:
**Macro Flash** - for optimal exposure of pictures inside 2' shooting distance.
**Far Flash** - for optimal exposure beyond 6' shooting distance.

**Housing Serial #**
*(inside bottom)*

**Closing Latch**

**Leak Detection Window**

**Navigation buttons**

Up ▲ thumbnails

Right ▶ Timer

Left ◀ Flash

Down ▼ Delete

OK/ 🔍

# How to set-up the Underwater Housing

## Set up camera

1. Insert 2 fully charged Ni-MH batteries (size AA, capacity at least 1800 mAh). See page 68 for more battery information. Make sure you insert the batteries with the correct + and – polarity.
2. Clean camera lens with dry, clean cotton cloth.
3. Set camera focus lens to Seascape/Landscape ▲/▶distance, (left position). DO NOT SET TO MACRO or Portrait.
4. Remove camera strap since this may prevent the camera from correctly seating itself inside the housing.
5. Set camera to Sea mode. If you are using an External Flash, set camera to External Flash mode. See page 49 for detailed instructions on how to set camera to Land, Sea or External Flash modes.

## Set up housing

⚠ *Opening and loading of the housing should be done only in dry cool air, such as in an air-conditioned room to prevent fogging.*

1. Open the housing by pulling up latch on side of housing. Do not extend housing lid beyond its stop point or damage may occur to the hinge area.


To OPEN: Push up rubber grip

Pull up latch

2. Carefully inspect O-ring for damage and make sure O-ring is firmly seated in its groove. If O-ring is damaged and requires replacement, contact SeaLife Service Center (For service details, see page 58).

3. Clean the housing glass lens port using clean, dry cotton cloth. It is recommended to apply anti-fog solution to the inside surface of the housing lens port.

4. Carefully insert camera into housing. Make sure camera is clean and dry.

5. Insert two Anti-Fog desiccant capsules into special slots inside housing. Note: New desiccant capsules will be blue in color. As the desiccant absorbs moist air, it turns from blue to light pink. Replace desiccant capsules when color changes to light pick.

6. Carefully clean O-ring and inside of housing area where O-ring makes contact. Use cleaning brush provided in Care Kit. O-ring must not be wet when sealing housing, allow these areas to dry.

⚠ *O-Ring must be absolutely clean of all lint, sand or other small particles. Do not grease O-ring.*
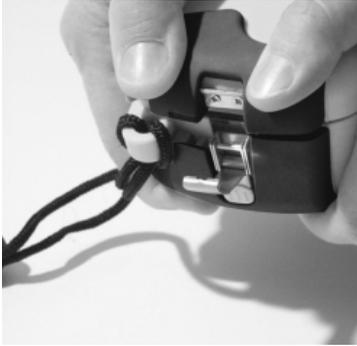
*Close housing lid tightly, then close latch.*

7. Do not allow any water droplets to get inside housing. This will cause the inside of the housing to fog.
8. Close housing lid tightly. Make sure there are no obstructions that prevent the housing from closing. Make sure lid is tightly pressed into housing, ( see picture).
9. Close housing latch. Make sure the lid is pressed flat and evenly against the housing body. The housing may leak if the lid is not flat against the housing when closed.

**Test camera and housing**
1. Press the power button on the upper back side of the housing to turn camera power on.
2. Press the shutter button on the top of the housing to take a test picture.
3. The power or shutter button should have a smooth action and return to its original resting position after pressing. It is normal to feel some resistance when pressing the power and shutter button.
4. Press and hold power button to turn camera power off. It is recommended to leave camera power off until you're ready to use camera to preserve battery power.
5. After 1 minute the LCD and monitor will turn off, and the camera will in power save mode. To re-activate power, push the SHUTTER BUTTON.
6. After 3 minutes the camera power will shut down. To operate the camera, push the POWER BUTTON to turn on the camera.

# Using and cleaning the underwater housing and camera
## Entering the water with housing
1. Do not enter water with camera in your hand. Have someone hand you the camera after you have entered the water.
2. For tips on taking pictures, see "Great Pictures Made Easy" on page 65.

## After using housing underwater
1. Before entering dive boat, hand housing to someone on the boat.
2. Make sure the sealed housing is placed in a fresh water tank available on most dive boats. This will clean the salt water from    the camera housing and prevents the salt water from drying on the camera housing and O-ring. Never let salt water dry on the camera housing. Salt crystals can damage the O-ring, lens and attract moisture. Dry housing with clean soft towel after removing from fresh water tank.
3. Do not expose camera and housing to direct sunlight – keep in a shaded area or under a dry towel.
4. It is not recommended to remove camera from housing while on the dive boat. Allowing humid air to enter the housing may cause fogging.
5. If you must open the housing while on the dive boat, make sure you and the housing are perfectly dry before opening the housing. Do not allow the inside of the housing or the camera to get wet.

## Cleaning housing after use
1. The sealed housing must be thoroughly cleaned with fresh water before opening. Never let salt water dry on housing. Salt crystals may damage the O-ring, lens and attract moisture.
2. Never let water drops dry on lens. Wipe lens dry with clean cotton cloth.
3. Before opening housing, everything, including your hands, head and surrounding area must be totally dry. Have a dry towel handy.
4. After opening the housing, clean the camera, O-ring area and all inside and outside parts with a clean, dry cotton cloth.
5. Before storing the housing and camera, remove batteries, SD card and keep in a clean dry area. Make sure the housing and any accessories are clean and dry before storage.
6. Never store camera or housing in direct sunlight or in a dark damp area. The airtight, unbreakable SeaLife ReefMaster Dry Case (Item # SL930) is highly recommended along with 1-oz bags of SeaLife Moisture Muncher Desiccant (Item # M101) for travel and storage.

# Great Pictures Made Easy

Taking underwater pictures is much different that taking land pictures. Here are the most important tips to taking great pictures underwater:

**1. Crystal Clear water.**

Crystal Clear water is essential for good underwater pictures. Remember the human eye can see more detail than a camera. In other words, your eyes see the water as being clearer than it actually is. Floating particles like algae, and silt cause low visibility. Avoid stirring up the sandy bottom with your fins. These floating particles cause small spots to appear in your picture, known as "backscatter."

Always remember to limit your shooting distance to 1/10 of the water visibility. For example, if the visibility is 60 feet (18 m), you should keep your shooting distance to within 6 feet (1.8m); in 30 feet (10 m) visibility you should be no further than 3 feet (90 cm) away from your subject.

**2. Stay within the ideal shooting distance of 2 to 6 feet.**

The ideal shooting distance is between 2 to 6 feet (0.6 to 1.8 meters). This distance will result in the most detailed and colorful pictures. Snap on the optional 3X Macro lens to the front port of the housing for sharp pictures from 2 to 3 feet (60 to 90cm). When using the 3X Macro lens, use your stretched-out arm as a measuring tool to keep your minimum shooting distance of 2 feet (0.6 meters). When not using Macro lens, maintain a minimum shooting distance of 3.5 feet (1 meter). Remember that light does not travel very far underwater, so the closer you are to your subject the more colorful the pictures will be. For the best most colorful pictures, we advise using the optional External Flash and Macro Set.

**3. Move calmly and control your buoyancy before taking a picture.**

It is very hard to take good pictures when you are moving. Look around for great picture opportunities. First position yourself at the best angle, and neutralize your buoyancy. Second, use the LCD monitor to perfectly frame your subject, check your shooting distance and keep the camera steady. Third, be calm and patient: Sometimes you have to wait a little bit so the fish that were frightened away, come back. Don't chase the fish, let the fish come to you.

*Always be in control of your buoyancy before taking pictures and observe all safe-diving rules.*

**4. Shoot and review - If you don't like it, delete it.**

One of the key advantages of the SeaLife digital camera is that the monitor displays the picture you've just taken. The monitor will display a message "DELETE THIS?" for 3 seconds. If you don't like it, delete it by pushing the shutter button again. One of the best ways to learn underwater photography is from your good pictures and

## 5. Take several pictures of the same subject.

Use different distances and angles. (Allow about 10 seconds between shots for the flash to re-charge).  Study and compare the good and bad pictures and you will soon be a master.

⚠️ *Never touch any sea creatures.  Consult your dive master about approaching dangerous creatures or structures.*

## 6. Use SeaLife Macro and Wide Angle Lenses for dramatic close-ups.

The SeaLife Macro and Wide Angle lenses allow you to get super close to your subject for images full of colors and razor-sharp details.  Each SeaLife macro lens has optical coatings for color correction (reduces the underwater bluish effect) and a neutral density coating to prevent over flashing.

With the 24mm wide-angle lens you fit a close group of 4 dive buddies or a 6-foot (180 cm) shark at a shooting distance of 6 feet (180 cm).  Normally you would have to be 10 feet away, too far for a sharp picture.  The following lenses are available at your local scuba dive dealer:

| Lens description | Item # | Effective range |
|---|---|---|
| No Lens | N/A | 3.5′ (1m)  to infinity |
| Macro 3X lens/filter | SL951 | 22" to 36" (56 to 90 cm) |
| Macro 8X lens/filter | SL959 (set) | 16" to 22" (40 to 56 cm) |
| Macro 16X lens/filter | SL959 (set) | 8" to 11" (20 to 28 cm) |
| 24 mm Wide angle lens | SL970 | 2′ (60 cm) to infinity<br>Field of view about 50% larger. |

The above shooting distance only apply to the DC200 and DC310 digital camera with focus set to Seascape.  SeaLife film cameras will have different shooting distances.

The 8X and 16X Macro lenses are sold in a set that also includes the extendable and collapsible distance-measuring device "Macro Wand" (Set item # SL959)

### 7. Use the SeaLife External Flash to enhance color and brightness.

Water filters out light and red/yellow colors resulting in darker, bluer images.  The only way to prevent this from occurring is by taking pictures at shallow depths (within 5′ depth on a sunny day) or by using artificial light, like the SeaLife External Flash.

The External Flash easily mounts to the bottom of the housing.  The flexible arm allows you to direct the flash at the subject.  Even two flashes can be mounted onto the housing for an evenly illuminated and shadow-free image.  This system blocks the built-in flash and prevents backscatter.  The flexible flash arms allow quick adjustments of the flash.  An optional Flash Diffuser can be snapped onto the flash head and is highly recommended for close-up shots of bright, reflective subjects.

### 8. The quick review feature allows you to playback pictures without removing the camera from the housing.

Press and hold the LCD button for 2 seconds.  The last image will appear. Press the LCD button to scroll to the next picture.  Press and hold the LCD button for 2 seconds to exit.

## Battery Selection Guide:

It is important to use only AA batteries designed for high drain electronic devices.

### Nickel Metal Hydride (Ni-MH)

We suggest using SeaLife 1800 mAh Ni-MH rechargeable batteries or higher mAh rated Ni-MH battery.  With Ni-MH batteries, you can expect about 2 hours of normal operating usage.  Ni-MH batteries can be recharged about 1000 times without the "memory" problems that you get with Ni-CAD batteries

With proper power management you can get through a dive day and recharge your batteries at night.

Do not expose Ni-MH batteries to water or moisture.  Properly dispose of any Ni-MH battery exposed to water or moisture.

See specific warning on battery.

### Lithium

Lithium AA batteries are suitable for the SeaLife digital camera.  AA Lithium batteries typically will last 5 times longest, cost the most and are not recharge-able.

### Standard and High Energy Alkaline

Do not use alkaline batteries, like Duracell Coppertop, since they may only last about 10 minutes in the SeaLife Digital Camera.

If you cannot use Ni-MH rechargeable batteries, you may use new "high energy" alkaline batteries that last a longer than standard alkaline batteries, but not as long as SeaLife Ni-MH rechargeable batteries.  The following are examples of "high energy" alkaline batteries:

1. Duracell Ultra

2. Panasonic (high energy)

3. Energizer Titanium or E3 (High Energy)

**Do not attempt to recharge alkaline batteries.**

**Battery Life**

We have tested  the following batteries under normal and extreme operating conditions.  The following operating times are averages and can vary depending on age of battery, temperature and other factors.

**Normal conditions** *(designed to simulate operating conditions when scuba diving):*

1. Turn camera on, take a test picture.  Set to Sea Mode.  Put in housing, close housing.
2. 90 minutes later:  Turn power on.  Take three pictures on land. 10 Minutes later: Take pictures underwater for 45 Minutes, not continuously, but every 2 Minutes, =23 pictures.
3. Wait for 1 hour, then take 20 underwater pictures in 40 Minutes.
4. Wait for 2 hours, then repeat step 2 and step 3.
5. Then repeat 3.

**Extreme conditions** *(designed to test the power consumption in the most extreme operating conditions.)*

1. Turn camera on, Set to External FLASH mode. Put in housing, close housing.
2. Take picture intervals as quickly as possible (display always ON, FLASH always fires)

| Battery Type | Life during NORMAL use | Life during EXTREME usage |
|---|---|---|
| SeaLife Ni-MH rechargeable (2100mAh) | 200 minutes | 100 minutes |
| Energizer Lithium $E^2$ (non-rechargeable) | 400 minutes | 200 minutes |
| Duracell Ultra (high-energy alkaline) | 200 minutes | 60 minutes |
| Duracell Coppertop (Standard alkaline) | 20 minutes | 10 minutes |

*Note:  The above times may vary depending on other factors like temperature, humidity, age of batteries and other factors.*

# Trouble shooting guide

| Problem | Possible cause | Corrective Action |
|---|---|---|
| No Power | Battery power low. . . . . . . . . . . | Replace or recharge batteries. |
| | Wrong type of batteries. . . . . . . | Use only AA designed for high drainage electronics. *(see battery selection guide)* |
| | Battery + and - not inserted correctly. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | Check that batteries are inserted correctly. |
| | Power save function activated. . | Turn camera back on. |
| | Camera damaged . . . . . . . . . . . | Contact service center. |
| Camera gets hot | Constant use of camera. . . . . . . | This is normal. |
| | Using incorrect battery type. . . . | Use only AA designed for high drainage electronics. *(see battery selection guide)* |
| No PC connection | USB cable not connected to USB port. . . . . . . . . . . . . . . | Inspect connection ports. |
| | Slow PC connection time. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | Give at least 5 minutes for some PC's to establish connection. |
| | Camera driver not installed . . . . | Install camera driver CD (page 39). |
| No Video Connection | Improper connection to TV . . . . | Connect video cable to video IN jack of TV or VCR and change TV/VCR to video in channel. |
| Poor Video connection | Video cable not fully inserted into camera or TV . . . . . . . . . . | Make sure video cable is completely inserted into video jack of camera until it clicks. Also check that connection to TV/VCR is correct. |
| "Memory full" message | Memory storage is full. . . . . . . . | Delete images or download to PC.  Insert empty CF card. |
| Pictures out of focus | Dirty lens. . . . . . . . . . . . . . . . . | Clean lens with clean cotton cloth. |
| | Incorrect focus setting. . . . . . . . | Check lens for correct focus (macro or standard). |
| | Fogged housing lens. . . . . . . . . | Insert camera in dry, air-conditioned room.  Use anti-fog desiccant inside housing.  Do not let water drops get inside housing. |
| | Too close to subject. . . . . . . . . . | Shooting distance must be 2'+ (macro = 1' to 2'). |
| | Low water visibility  . . . . . . . . . . | Shooting distance not to exceed 1/10 of visibility. |

| Problem | Possible cause | Corrective Action |
|---------|----------------|-------------------|
| Grainy picture | Dark light conditions. . . . . . . . | Move closer to subject (2′ to 6′). Use SeaLife External Flash to illuminate subject and improve color and brightness. |
| Overexposed image | To close to reflective object. . . . | Move farther away from subject (4′ to 6′). Turn External Flash away from subject. Use External Flash Diffuser (SL968). |
| Flash not firing | Flash on Auto and is not needed. . . . . . . . . . . . . . . | Turn fill-flash ON (see page 30) |
| | Finger over flash window . . . . . | Grip camera correctly, not blocking flash. |
| | Improper operating mode . . . . . | Check for proper operating mode (Land or Sea). |
| Lost images | Defective SD card. . . . . . . . . . | Use only approved quality SD cards. Reformat SD card (will delete pictures). |
| | Defective internal memory. . . . . | Reformat memory (this will delete pictures in memory). |
| | Using camera with low battery power. . . . . . . . . . . . . | Replace with freshly charged batteries. |
| Image number indicator does not count down | This may occur depending on actual memory available. . . . . . | N/A |
| Housing leaks water | O-ring not clean or is damaged . . . . . . . . . . . . . . . | Perfectly clean main O-ring. Inspect for damage or dents to housing and O-ring. Replace damaged O-ring. Camera not seated in housing. Remove strap or any accessory from camera. Check that camera is completely seated in housing. |
| No image on TV set | Improper connection. . . . . . . . | Check cable connections. |
| | Wrong video mode.. . . . . . . . . | Change video mode in camera set-up menu (page 52). |

For updated trouble shooting guide refer to website: **www.sealife-cameras.com**